4° Mus. Th.
622 c 1

BIBLIOTHECA
REGIA
MONACENSIS.

<36625247660011 S

<36625247660011

Bayer. Staatsbibliothek

Hawkins
History of
Music

g

I.B. CIPRIANI INVEN.

C. GRIGNION SCULP

GUIDO ARETINUS A BENEDICTINE MONK, HAVING REFORMED THE SCALE OF MUSIC AND INVENTED A NEW METHOD OF NOTATION, COMMUNICATES HIS IMPROVEMENTS TO POPE JOHN XX, WHO INVITES HIM TO ROME AND BECOMES HIS DISCIPLE.

A

GENERAL HISTORY

OF THE

SCIENCE and PRACTICE

OF

MUSIC,

BY

SIR JOHN HAWKINS.

IN FIVE VOLUMES.

VOLUME THE FIRST.

LONDON,
Printed for T. PAYNE and Son, at the Mews-Gate.
MDCCLXXVI.

127 g

Bayerische
Staatsbibliothek
München

BIBLIOTHECA
REGIA
MONACENSIS

BIBLIOTECA
REGIA
MONACENSIS

TO

GEORGE THE THIRD,

KING OF GREAT BRITAIN, ETC.

A PRINCE

NOT MORE DISTINGUISHED

BY HIS PATRONAGE OF THOSE ELEGANT ARTS

WHICH EXALT HUMANITY

AND ADMINISTER TO THE IMAGINATIVE FACULTIES

THE PUREST DELIGHTS,

THAN

HONOURED AND BELOVED

FOR HIS REGAL AND PRIVATE VIRTUES,

THE FOLLOWING HISTORY IS,

WITH ALL DUE REVERENCE

AND GRATITUDE,

DEDICATED

BY HIM WHO ESTEEMS IT

EQUALLY AN HONOUR AND A FELICITY

TO SUBSCRIBE HIMSELF

HIS MAJESTY's FAITHFUL AND DEVOTED

SUBJECT AND SERVANT,

THE AUTHOR.

PREFACE.

A HISTORY of Muſic by any but a profeſſor of the ſcience, may poſſibly be looked on as a bold undertaking; and it may appear not a little ſtrange that one, who is perhaps better known to the world as occupying a public ſtation, than as a writer, ſhould chooſe to be the author of a work of this kind, and for which the courſe of his ſtudies can hardly be ſuppoſed to have in any degree qualified him.

In juſtification of the attempt, and to account for this ſeeming inconſiſtency, the reader is to know, that the author having entertained an early love of muſic, and having in his more advanced age not only become ſenſible of its worth, but arrived at a full conviction that it was intended by the Almighty for the delight and edification of his rational creatures, had formed a deſign of ſome ſuch work as this many years ago, but ſaw reaſon to defer the execution thereof to a future period.

About the year 1759, he found himſelf in a ſituation that left his employments, his ſtudies, and his amuſements in a great meaſure to his own choice; and having in a courſe of years been as induſtrious in making collections for the purpoſe as could well conſiſt with the exerciſe of a laborious profeſſion, he, with a copious fund of materials, began the work: But before any conſiderable progreſs could be made therein, he was interrupted by a call to preſide in the magiſtracy of the county of his reſidence, which, though unſolicited on his part, he could not decline without betraying an indifference to the intereſts of ſociety, and the preſervation of public order, or ſuch an averſion to the occupations of an active life, as in few caſes is excuſable, and in many reproachful.

Deter-

Determining, however, to avail himself of those intervals of leisure which the stated recesses from the exercise of his office afforded, and which seemed too precious to be wasted either in sloth and indolence, or those fashionable recreations and amusements, to which he was ever disposed to prefer the pursuit of literature, he re-assumed his work; and with the blessing of health, scarcely interrupted for a series of years, has been able to present it to the world in the condition in which it now comes forth.

What the reader is to expect from it, and as the fruit of many years study and labour, is the history of a science deservedly ranked among those, which, in contradistinction to the manual arts, and others of lower importance, have long been dignified with the characteristic of liberal; and as the utility of Music is presupposed in the very attempt to trace its progress, an enumeration of its various excellencies will scarcely be thought necessary; the rather perhaps as its praises, and the power it exercises over the human mind, have been celebrated by the ablest panegyrists.

Farther than the circumstances attending the peculiar situation of the author and the work may be allowed to entitle him to it, the favour or indulgence, or whatever else it is the practice of writers to crave of the public, is not here sued for, either on the ground of want of leisure, inadvertence, or other pretences; for this reason, that there can be no valid excuse for a publication wittingly imperfect: And it is but a sorry compliment that an author makes to his reader, when he tenders him a work less worthy regard than it was in his power to make it.

To be short, the ensuing volumes are the produce of sixteen years labour, and are compiled from materials which were not collected in double that time. The motives to the undertaking were genuine, and the prosecution of it has been as animated as the love of the art, and a total blindness to lucrative views, could render it. And perhaps the best excuse the author can make for the defects and errors that may be found to have escaped him, must be drawn from the novelty of his subject, the variety of his matter, and

the

the neceſſity he was under of marking out himſelf the road which he was to travel.

It may perhaps be objected that muſic is a mere recreation, and an amuſement for vacant hours, conducing but little to the benefit of mankind, and therefore to be numbered among thoſe vanities which it is wiſdom to contemn. To this it may be anſwered, that, as a ſource of intellectual pleaſure, muſic has greatly the advantage of moſt other recreations; and as to the other branch of the objection, let it be remembered that all our deſires, all our purſuits, our occupations, and enjoyments are vain. What are ſtately palaces, beautiful and extenſive gardens, coſtly furniture, ſculptures, and pictures, but vanities? and yet there are few men ſo vain as that they had rather be without than poſſeſs them. Nay, if theſe be denied us, where are we to ſeek for amuſements, for relief from the cares, the anxieties and troubles of life, how ſupport ourſelves in ſolitude, or under the preſſure of affliction, or how preſerve that equanimity, which is neceſſary to keep us in good humour with ourſelves and mankind? As to the abuſes of this excellent gift, enough it is preſumed is ſaid in the enſuing work by way of caution againſt them, and even to demonſtrate that as there is no ſcience or faculty whatever that more improves the tempers of men, rendering them grave, diſcreet, mild, and placid, ſo is there none that affords greater ſcope for folly, impertinence, and affectation.

The end propoſed in this undertaking is the inveſtigation of the principles, and a deduction of the progreſs of a ſcience, which, though intimately connected with civil life, has ſcarce ever been ſo well underſtood by the generality, as to be thought a fit ſubject, not to ſay of criticiſm, but of ſober diſcuſſion: Inſtead of exerciſing the powers of reaſon, it has in general engaged only that faculty of the mind, which, for want of a better word to expreſs it by, we call Taſte; and which alone, and without ſome principle to direct and controul it, muſt ever be deemed a capricious arbiter. Another end of this work is the ſettling muſic upon ſomewhat like a footing of equality with thoſe, which, for other reaſons than that,

like muſic, they contribute to the delight of mankind, are termed the ſiſter arts; to reprobate the vulgar notion that its ultimate end is merely to excite mirth; and, above all, to demonſtrate that its principles are founded in certain general and univerſal laws, into which all that we diſcover in the material world, of harmony, ſymmetry, proportion and order, ſeems to be reſolvable.

The method purſued for theſe purpoſes will be found to conſiſt in an explanation of fundamental doctrines, and a narration of important events and hiſtorical facts, in a chronological ſeries, with ſuch occaſional remarks and evidences, as might ſerve to illuſtrate the one and authenticate the other. With theſe are intermixed a variety of muſical compoſitions, tending as well to exemplify that diverſity of ſtyles which is common both to muſic and ſpeech or written language, as to manifeſt the gradual improvements in the art of combining muſical ſounds. The materials which have furniſhed this intelligence muſt neceſſarily be ſuppoſed to be very miſcellaneous in their nature, and abundant in quantity: To ſpeak alone of the treatiſes for the purpoſe, the author may with no leſs propriety than truth aſſert, that the ſelection of them was an exerciſe of deep ſkill, the reſult of much erudition, and the effect of great labour, as having been for a great part of his life the employment of that excellent theoriſt in the ſcience, Dr. Pepuſch. Theſe have been accumulating and encreaſing for a ſeries of years paſt: For others of a different kind recourſe has been had to the Bodleian library and the college libraries in both univerſities; to that in the muſic-ſchool at Oxford; to the Britiſh Muſeum, and to the public libraries and repoſitories of records and public papers in London and Weſtminſter; and, for the purpoſe of aſcertaining facts by dates, to cemeteries and other places of ſepulture; and to him that ſhall object that theſe ſources are inadequate to the end of ſuch an undertaking as this, it may be anſwered, that he knows not the riches of this country.

A correſpondence with learned foreigners, and ſuch communications from abroad as ſuit with the liberal ſentiments and diſpoſition of the preſent

ſent age, together with a great variety of oral intelligence reſpecting perſons and facts yet remembered, have contributed in ſome degree to the melioration of the work, and to juſtify the title it bears of A General Hiſtory; which yet it may be thought would have been more properly its due, had the plan of the work been ſtill more extenſive, and comprehended the ſtate of muſic in countries where the approaches to refinement have as yet been but ſmall.

*It muſt be confeſſed that in ſome inſtances, particularly in the diſcuſſion of the firſt principles of morality, and the origin of human manners, the reſearches of learned men have been extended to nations, or tribes of people, among whom the ſimple dictates of nature ſeemed to be the only rule of action; but the ſubjects here treated of are ſcience, and the ſcientific practice of muſic: Now the beſt muſic of barbarians is ſaid to be hideous and aſtoniſhing ſounds *. Of what importance then can it be to enquire into a practice that has not its foundation in ſcience or ſyſtem, or to know what are the ſounds that moſt delight an Hottentot, a wild American, or even a more refined Chineſe?*

For the ſtyle, it will be found to be uniformly narratory; as little incumbered with technical terms, and as free from didactic forms of ſpeech, as could conſiſt with the deſign of explaining doctrines and ſyſtems; and it may alſo be ſaid that care has been taken not to degrade the work by the uſe of fantaſtical phraſes and modes of expreſſion, that, comparatively ſpeaking, were invented yeſterday, and will die to-morrow; theſe make no part of any language, they conduce nothing to information, and are in truth nonſenſe ſublimated.

For the inſertion of biographical memoirs and characters of eminent muſicians, it may be given as a reaſon, that, having beneſited mankind by their ſtudies, it is but juſt that their memories ſhould live: Cicero, after Demoſthenes, ſays that 'bona fama propria poſſeſſio defunctorum;' and

* Characteriſtics, vol. I. page 242.

for

for beſtowing it on men of this faculty, we have the authority of that ſcripture which exhorts us to praiſe 'ſuch as found out muſical tunes, and 'recited verſes in writing' *: Beſides which it may be obſerved, that in various inſtances the lives of the profeſſors of arts are in ſome ſort a hiſtory of the arts themſelves. For digreſſions from his ſubject, the inſertion of anecdotes that have but a remote relation to it, or that deſcribe ancient modes or cuſtoms of living, the author has leſs to ſay; theſe muſt be left to the judgment of his readers, who cannot be ſuppoſed to be unanimous in their opinions about them.*

It remains now that due acknowledgement be made of the aſſiſtance with which the author has been favoured and honoured in the courſe of his work; but as this cannot be done without an enumeration of names, for which he has obtained no permiſſion, he is neceſſitated to declare his ſenſe of the obligation in general terms, with this exception, that having need of aſſiſtance in the correction of the muſic plates, he was in ſundry inſtances eaſed of that trouble by the kind offices of one, who is both an honour to his profeſſion and his country, Dr. William Boyce; and of the difficulty of decyphering, as it were, and rendering in modern characters the compoſitions of greateſt antiquity among thoſe which he found it neceſſary to inſert, by the learning and ingenuity of Dr. Cooke, of Weſtminſter-abbey, Mr. Marmaduke Overend, organiſt of Iſleworth in Middleſex, and Mr. John Stafford Smith, of the royal chapel.

* Wiſdom, chap. xliv. verſe 5.

Hatton Garden,
24th Aug. 1776.

PRELIMINARY DISCOURSE.

THE powers of the imagination, with great appearance of reaſon, are ſaid to hold a middle place between the organs of bodily ſenſe and the faculties of moral perception; the ſubjects on which they are ſeverally exerciſed are common to the ſenſes of ſeeing and hearing, the office of which is ſimply perception; all pleaſure thence ariſing being referred to the imagination.

The arts which adminiſter to the imaginative faculty the greateſt delight, are confeſſedly poetry, painting, and muſic; the two former exhibiting to the mind by their reſpective media, either natural or artificial *, the reſemblances of whatever in the works of nature is comprehended under the general diviſion of great, new, and beautiful; the latter as operating upon the mind by the power of that harmony which reſults from the concord of ſounds, and exciting in the mind thoſe ideas which correſpond with our tendereſt and moſt delightful affections.

Theſe, it muſt be obſerved, conſtitute one ſource of pleaſure; but each of the above arts may in a different degree be ſaid to afford another, namely, that which conſiſts in a compariſon of the images by them ſeverally and occaſionally excited in the mind, with their architypes; thus, for inſtance, in poetry, in comparing a deſcription with the thing deſcribed; in painting, a landſcape and the ſcene repreſented by it, or a portrait and its original; and in muſic, where imitation is intended, as in the ſongs of birds, or in the expreſſion of thoſe various in-

* The natural media ſeem to conſiſt only in colour and figure, and refer ſolely to painting: the artificial are words, which are ſymbols by compact of ideas, as are alſo, in a limited ſenſe, muſical ſounds, including in the term the accident of time or duration.

 flexions

flexions of the voice which accompany paſſion or exclamation, weeping, laughing, and other of the human affections, the ſound and the thing ſignified.

It is eaſy to diſcover that the pleaſures above deſcribed are of two diſtinct kinds, the one original and abſolute, the other relative; for the one we can give no reaſon other than the will of God, who in the formation of the univerſe and the organization of our bodies, has eſtabliſhed ſuch a relation as is diſcoverable between man and his works; the other is to be accounted for by that love of truth which is implanted in the human mind *. In poetry and painting therefore we ſpeak, and with propriety, of abſolute and relative beauty; as alſo of muſic merely imitative; for as to harmony, it is evident that the attribute of relation belongs not to it, as will appear by a compariſon of each with the others †.

* In this ſentiment liberty has been taken to differ from Mr. Harris, who with his uſual accuracy, has analyſed this principle of the human mind in the following note on a paſſage in the ſecond of his Three celebrated Treatiſes.

'That there is an eminent delight in this very recognition itſelf, abſtract from 'any thing pleaſing in the ſubject recognized, is evident from hence——that, in 'all the mimetic arts, we can be highly charmed with imitations, at whoſe origi-'nals in nature we are ſhocked and terrified. Such, for inſtance, as dead bodies, 'wild beaſts, and the like.

'The cauſe aſſigned for this, ſeems to be of the following kind: We have a 'joy, not only in the ſanity and perfection, but alſo in the juſt and natural ener-'gies of our ſeveral limbs and faculties. And hence, among others, the joy in 'reaſoning, as being the energy of that principal faculty, our intellect or under-'ſtanding. This joy extends, not only to the wiſe, but to the multitude. For 'all men have an averſion to ignorance and error; and in ſome degree, however 'moderate, are glad to learn and to inform themſelves.

'Hence therefore the delight ariſing from theſe imitations; as we are enabled 'in each of them to exerciſe the reaſoning faculty; and, by comparing the copy 'with the architype in our minds, to infer that this is ſuch a thing, and that an-'other; a fact remarkable among children, even in their firſt and earlieſt days.'

† Nevertheleſs there have not been wanting thoſe, who, not contemplating the intrinſic excellence of harmony, have reſolved the efficacy of muſic into the power of imitation; and to gratify ſuch, ſubjects have been introduced into practice, that to injudicious ears have afforded no ſmall delight; ſuch, for inſtance, as the noiſe of thunder, the roaring of the winds, the ſhouts and acclamations of multitudes, the wail-

ings

With regard to poetry, it may be ſaid to reſemble painting in many reſpects, as in the deſcription of external objects, and the works of nature; and ſo far it muſt be conſidered as an imitative art; but its greateſt excellence ſeems to be its power of exhibiting the internal conſtitution of man, and of making us acquainted with characters, manners, and ſentiments, and working upon the paſſions of terror, pity, and various others. Painting is profeſſedly an imitative art; for, ſetting aſide the harmony of colouring, and the delineation of beautiful forms, the pleaſure we receive from it, great as it is, conſiſts in the truth of the repreſentation.

But in muſic there is little beyond itſelf to which we need, or indeed can, refer to heighten its charms. If we inveſtigate the princi-

ings of grief and anguiſh in the human mind; the ſong of the cuckow, the whooting of the ſcreech-owl, the cackling of the hen, the notes of ſinging-birds, not excepting thoſe of the lark and nightingale. Attempts alſo have been made to imitate motion by muſical ſounds; and ſome have undertaken in like manner to relate hiſtories, and to deſcribe the various ſeaſons of the year. Thus, for example, Froberger, organiſt to the emperor Ferdinand III. is ſaid to have in an allemand repreſented the paſſage of Count Thurn over the Rhine, and the danger he and his army were in, by twenty-ſix cataracts or falls in notes. See vol. IV. page 183. Kuhnau, another celebrated muſician, compoſed ſix ſonatas, entitled Bibliſche Hiſtorien, wherein, as it is ſaid, is a lively repreſentation in muſical notes of David manfully combating Goliah. Vol. IV. page 281, in not. Buxtehude of Lubec alſo compoſed ſuites of leſſons for the harpſichord, repreſenting the nature of the planets. Vol. V. page 251. Vivaldi, in two books of concertos, has ſtriven to deſcribe the four ſeaſons of the year. Vol. V. page 214. Geminiani has tranſlated a whole epiſode of Taſſo's Jeruſalem into muſical notes. Vol. V. page 423. And Mr. Handel himſelf, in his Iſrael in Egypt, has undertaken to repreſent two of the ten plagues of Egypt by notes, intended to imitate the buzzing of flies and the hopping of frogs.

But theſe powers of imitation, admitting them to exiſt in all the various inſtances above enumerated, conſtitute but a very ſmall part of the excellence of muſic; wherefore we cannot but applaud that ſhrewd anſwer of Ageſilaus, king of Sparta, recorded in Plutarch, to one who requeſted him to hear a man ſing that could imitate the nightingale, 'I have heard the nightingale herſelf.' The truth is, that imitation belongs more properly to the arts of poetry and painting than to muſic; for which reaſon Mr. Harris has not ſcrupled to pronounce of muſical imitation, that at beſt it is but an imperfect thing. See his Diſcourſe on Muſic, Painting, and Poetry, pag. 69.

ples of harmony, we learn that they are general and univerſal; and of harmony itſelf, that the proportions in which it conſiſts are to be found in thoſe material forms, which are beheld with the greateſt pleaſure, the ſphere, the cube, and the cone, for inſtance, and conſtitute what we call ſymmetry, beauty, and regularity; but the imagination receives no additional delight; our reaſon is exerciſed in the operation, and that faculty alone is thereby gratified. In ſhort, there are few things in nature which muſic is capable of imitating, and thoſe are of a kind ſo unintereſting, that we may venture to pronounce, that as its principles are founded in geometrical truth, and ſeem to reſult from ſome general and univerſal law of nature, ſo its excellence is intrinſic, abſolute, and inherent, and, in ſhort, reſolvable only into his will, who has ordered all things in number, weight, and meaſure *.

Seeing therefore that muſic has its foundation in nature, and that reaſon recognizes what the ſenſe approves, what wonder is it, that in all ages, and even by the leaſt enlightened of mankind, its efficacy ſhould be acknowledged; or that, as well by thoſe who are capable of reaſon and reflection, as thoſe who ſeek for no other gratifications than what are obvious to the ſenſes, it ſhould be conſidered as a genuine and natural ſource of delight? The wonder is, that leſs of that curioſity, which leads men to enquire into the hiſtory and progreſs of arts, and their gradual advances towards perfection, has been exerciſed in the inſtance now before us, than in any other of equal importance.

If we take a view of thoſe authors who have written on muſic, we ſhall find them comprehended under three claſſes, conſiſting of thoſe who have reſolved the principles of the ſcience into certain mathematical proportions; of others who have treated it ſyſtematically, and with a view to practice; and of a third, who, conſidering ſound as a branch of phyſics, have from various phenomena explained the manner in which it is generated and communicated to the auditory fa-

* Wiſdom, xi. 20.

culty.

culty. But to whom we are indebted for the gradual improvements of the art, at what periods it flouriſhed, what checks and obſtructions it has at times met with, who have been its patrons or its enemies, what have been the characteriſtics of its moſt eminent profeſſors, few are able to tell. Nor has the knowledge of its precepts been communicated in ſuch a manner as to enable any but ſuch as have devoted themſelves to the ſtudy of the ſcience to underſtand them. Hence it is that men of learning have been betrayed into numberleſs errors reſpecting muſic; and when they have preſumed to talk about it, have diſcovered the groſſeſt ignorance. When Strada, in the perſon of Claudian, recites the fable of the Nightingale and the Lyriſt, how does his invention labour to deſcribe the conteſt, and how does he err in the confuſion of the terms melody and harmony; and in giving to muſic either attributes that belong not to it, or which are its leaſt excellence! and what is his whole poem but a vain attempt to excite ideas for which no correſpondent words are to be found in any language? Nor does he, who talks of the genius of the world, of the firſt beauty, and of univerſal harmony, ſymmetry, and order, the ſublime author of the Characteriſtics, diſcover much knowledge of his ſubject, when after aſſerting with the utmoſt confidence that the ancients were acquainted with parts and ſymphony, he makes it the teſt of a good judge in muſic 'that he underſtand a fiddle *.'

Sir William Temple ſpeaking of muſic in his Eſſay upon the ancient and modern Learning, has betrayed his ignorance of the ſubject in a compariſon of the modern muſic with the ancient; wherein, notwithſtanding that Paleſtrina, Bird, and Gibbons lived in the ſame century with himſelf, and that the writings of Shakeſpeare, and the Paradiſe Loſt were then extant, he ſcruples not to aſſert that 'the 'ſcience is wholly loſt in the world, and that in the room of muſic 'and poetry we have nothing left but fiddling and rhyming.'

Mr. Dryden, in thoſe two admirable poems, Alexander's Feaſt, and his leſſer Ode for St. Cecilia's day, and in his Elegy on the death

* Vide Characteriſtics, vol. III. page 263, in not. 269.

of

of Purcell, with great judgment gives to the ſeveral inſtruments mentioned by him their proper attributes; and recurring perhaps to the numerous common places in his memory reſpecting muſic, has deſcribed its effects in adequate terms; but when in the prefaces to his operas he ſpeaks of recitative, of ſong, and the comparative merit of the Italian, the French, and the Engliſh compoſers, his notions are ſo vague and indeterminate, as to convince us that he was not maſter of his ſubject, and does little elſe than talk by rote.

Mr. Addiſon, in thoſe ſingularly humorous papers in the Spectator, intended to ridicule the Italian opera, is neceſſitated to ſpeak of muſic, but he does it in ſuch terms, as plainly indicate that he had no judgment of his own to direct him. In the paper, Numb. 18, the higheſt encomium he can vouchſafe muſic is, that it is an agreeable entertainment; and a little after he complains of our fondneſs for the foreign muſic, not caring whether it be Italian, French, or High Dutch, by which latter we may ſuppoſe the author meant the muſic of Mynheer Hendel, as he calls him.

In another paper, viz. Numb. 29, the ſame perſon delivers theſe ſentiments at large reſpecting Recitative: 'However the *Italian* 'method of acting in *Recitativo* might appear at firſt hearing, I 'cannot but think it more juſt than that which prevailed in our '*Engliſh* Opera before this Innovation; the Tranſition from an air 'to Recitative Muſick being more natural than the paſſing from a 'Song to plain and ordinary Speaking, which was the common 'Method in *Purcell*'s operas.

'The only Fault I find in our preſent Practice, is the making uſe 'of the *Italian Recitativo* with *Engliſh* words.

'To go to the Bottom of this Matter, I muſt obſerve that the 'Tone, or, as the *French* call it, the Accent of every Nation in 'their ordinary Speech is altogether different from that of every 'other People, as we may ſee even in the Welſh and Scotch, who 'border ſo near upon us. By the Tone or Accent I do not mean 'the Pronunciation of each particular Word, but the Sound of the

'whole

'whole Sentence. Thus it is very common for an Engliſh gentle-
'man, when he hears a French Tragedy, to complain that the Actors
'all of them ſpeak in a Tone; and therefore he very wiſely prefers
'his own Countrymen, not conſidering that a Foreigner complains
'of the ſame Tone in an Engliſh Actor.

'For this Reaſon, the Recitative Muſic in every Language ſhould
'be as different as the Tone or Accent of each Language; for other-
'wiſe what may properly expreſs a Paſſion in one Language, will
'not do it in another. Every one that has been long in Italy knows
'very well that the Cadences in the Recitativo bear a remote Affinity
'to the Tone of their Voices in ordinary Converſation; or, to ſpeak
'more properly, are only the Accents of their Language made more
'Muſical and Tuneful.

'Thus the Notes of Interrogation or Admiration in the Italian
'Muſick, (if one may ſo call them) which reſemble their Accents in
'Diſcourſe on ſuch Occaſions, are not unlike the ordinary Tones of an
'Engliſh Voice when we are angry; inſomuch that I have often ſeen
'our Audiences extreamly miſtaken as to what has been doing upon
'the Stage, and expecting to ſee the Hero knock down his Meſ-
'ſenger when he has been aſking him a queſtion; or fancying that
'he quarrels with his Friend when he only bids him Good-morrow.

'For this Reaſon the Italian artiſts cannot agree with our Engliſh
'muſicians in admiring Purcell's Compoſitions, and thinking his Tunes
'ſo wonderfully adapted to his words, becauſe both Nations do not
'always expreſs the ſame Paſſions by the ſame Sounds.

'I am therefore humbly of opinion that an Engliſh Compoſer
'ſhould not follow the Italian Recitative too ſervilely, but make
'uſe of many gentle Deviations from it in Compliance with his own
'Native Language. He may copy out of it all the lulling Softneſs
'and Dying Falls, (as Shakeſpeare calls them) but ſhould ſtill re-
'member that he ought to accommodate himſelf to an Engliſh Au-
'dience, and by humouring the Tone of our Voices in ordinary
'Converſation, have the ſame Regard to the Accent of his own

'Lan-

'Language, as thoſe Perſons had to theirs whom he profeſſes to 'imitate. It is obſerved that ſeveral of the ſinging Birds of our own 'Country learn to ſweeten their Voices, and mellow the Harſhneſs 'of their natural Notes by practiſing under thoſe that come from 'warmer Climates. In the ſame manner I would allow the Italian 'Opera to lend our Engliſh Muſick as much as may grace and ſoften 'it, but never entirely to annihilate and deſtroy it. Let the Infu-'ſion be as ſtrong as you pleaſe, but ſtill let the Subject Matter of 'it be Engliſh.

'A Compoſer ſhould fit his Muſick to the Genius of the People, 'and conſider that the Delicacy of Hearing and Taſte of Harmony 'has been formed upon thoſe Sounds which every Country abounds 'with. In ſhort, that Muſick is of a relative Nature, and what is 'Harmony to one Ear may be Diſſonance to another.'

Whoever reflects on theſe ſentiments muſt be inclined to queſtion as well the goodneſs of the author's ear as his knowledge of ſubject. The principle on which his reaſoning is founded, is clearly that the powers of muſic are local; deriving their efficacy from habit, cuſtom, and whatever elſe we are to underſtand by the genius of a people; a poſition as repugnant to reaſon and experience as that which concludes his diſquiſition, viz. that 'what is harmony to one ear may be diſſonance to another;' whence as a corollary it muſt neceſſarily follow, that the ſame harmony or the ſame ſucceſſion of ſounds may produce different effects on different perſons; and that one may be excited to mirth by an air that has drawn tears from another.

A late writer, in a ſtrain of criticiſm not leſs erroneous than affectedly refined, forgetting the energy of harmony, independent of the adventitious circumſtances of loudneſs or ſoftneſs that accompany the utterance of it; or perhaps not knowing that certain modulations or combinations of ſounds have a neceſſary tendency to inſpire grand and ſublime ſentiments, ſuch, for inſtance, as we hear in the Exaltabo of Paleſtrina, the Hoſanna of Gibbons, the opening of the firſt con-

concerto of Corelli, and many of Mr. Handel's anthems, aſcribes to the *burſts*, as he calls them, of Boranello *, and the ſymphonies of Yeomelli † the power of dilating, agitating, and rouzing the ſoul like the paintings of Timomachus and Ariſtides ‡, whoſe works by the way no man living ever ſaw, and of whoſe very names we ſhould be ignorant, did they not occur, the one in Pliny, the other in ſome of the epigrams in the Greek Anthologia.

In a manner widely different do thoſe poets and philoſophers treat muſic, who, being ſuſceptible of its charms, and conſidering it as worthy the moſt abſtract ſpeculation, have made themſelves acquainted with its principles. Milton, whenever he ſpeaks of the ſubject, and there are many paſſages in the Paradiſe Loſt and and his other poems, where he has taken occaſion to introduce it, beſides expreſſing an enthuſiaſtic fondneſs for muſic, talks the language of a maſter.

His ideas of the joint efficacy of muſic and poetry, and of the nature of harmony, are manifeſted in the following well-known paſſage:

> And ever againſt eating cares
> Lap me in ſoft Lydian aires;
> Married to immortal verſe,
> Such as the meeting ſoul may pierce
> In notes, with many a winding bout
> Of linked ſweetneſs long drawn out,
> With wanton heed, and giddy cunning,
> The melting voice through mazes running;
> Untwiſting all the chains, that tye
> The hidden ſoul of harmony.

Cathedral muſic and choral ſervice he deſcribes in terms that ſuf-

* i. e. Buranello, a diſciple of Lotti.

† Nicola Iomelli, a celebrated compoſer now living at Naples.

‡ See an Inquiry into the Beauties of Painting by Daniel Webb, Eſq. 8vo. 1769, page 167.

ficiently declare his abilities to judge of it, and its effects on his own mind:

There let the pealing organ blow,
To the full-voic'd choir below,
In ſervice high, and anthems clear,
As may with ſweetneſs through mine ear
Diſſolve me into extaſies,
And bring all heav'n before mine eyes.

The following ſonnet, addreſſed to his friend Mr. Henry Lawes, points out one of the great excellencies in the compoſition of muſic to words:

Harry, whoſe tuneful and well-meaſur'd ſong
First taught our Engliſh muſic how to ſpan
Words with juſt note and accent, not to ſcan
With Midas' ears, committing ſhort and long;
Thy worth and ſkill exempt thee from the throng,
With praiſe enough for envy to look wan;
To after-age thou ſhalt be writ the man,
That with ſmooth air could humour beſt our tongue.
Thou honour'ſt verſe, and verſe muſt lend her wing
To honour thee, the prieſt of Phœbus' choir,
That tun'ſt their happieſt lines in hymn, or ſtory.
Dante ſhall give Fame leave to ſet thee higher
Than his Caſella, whom he woo'd to ſing,
Met in the milder ſhades of Purgatory.

His ſonnet to Mr. Lawrence Hyde conveys his ſenſe of the delights of a muſical evening.

Lawrence, of virtuous father virtuous ſon,
Now that the fields are dank, and ways are mire,
Where ſhall we ſometimes meet, and by the fire
Help waſte a ſullen day; what may be won
From the hard ſeaſon gaining? time will run

On

On ſmoother, till Favonius re-inſpire
The frozen earth; and cloath in freſh attire
The lilie and the roſe, that neither ſow'd nor ſpun.
What neat repaſt ſhall feaſt us, light and choice,
Of Attic taſte, with wine; whence we may riſe
To hear the lute well toucht, or artful voice
Warble immortal notes and Tuſcan air?
He, who of thoſe delights can judge, and ſpare
To interpoſe them oft is not unwiſe.

And in his tractate on Education, he recommends the practice of muſic in terms that beſpeak his ſkill in the ſcience. 'The interim 'of unſweating themſelves regularly, and convenient reſt before meat, 'may both with profit and delight be taken up in recreating and 'compoſing their travail'd ſpirits with the ſolemn and divine harmo-'nies of muſick heard or learnt; either while the ſkilful organiſt plies 'his grave and fancied deſcant, in lofty fugues, or the whole ſymphony 'with artful and unimaginable touches adorn and grace the well-'ſtudied chords of ſome choice compoſer; ſometimes the lute, or ſoft 'organ-ſtop waiting on elegant voices either to religious, martial, 'or civil ditties; which, if wiſe men and prophets be not extremely 'out, have a great power over diſpoſitions and manners, to ſmooth 'and make them gentle from ruſtick harſhneſs and diſtempered 'paſſions.'

Lord Bacon, in his Natural Hiſtory, has given a great variety of experiments touching muſic, that ſhew him to have been not barely a philoſopher, an enquirer into the phenomena of ſound, but a maſter of the ſcience of harmony, and very intimately acquainted with the precepts of muſical compoſition.

That we have ſo few inſtances of this kind is greatly to be wondered at, ſeeing that in poetry and painting the caſe is far otherwiſe: In the courſe of a claſſical education men acquire not only a taſte of the beauties of the Greek and Roman poets, but a nice and diſcriminating

nating faculty, that enables them to diſcern their excellencies and defects; and in painting, an attentive peruſal of the works of eminent artiſts, aided by a ſound judgment, will go near to form the character of a connoiſſeur, and render the poſſeſſor of it ſuſceptible of all that delight which the art is capable of affording; and this we ſee exemplified in numberleſs inſtances, where perſons unſkilled in the practice of painting become enabled to diſtinguiſh hands, to compare ſtyles, and to mark the beauties of compoſition, character, drawing, and colouring, with a degree of accuracy and preciſion equal to that of maſters. But few, except the maſters of the ſcience, are poſſeſſed of knowledge ſufficient to enable them to diſcourſe with propriety on muſic; nor indeed do many attend to that which is its greateſt excellence, its influence on the human mind, or thoſe irreſiſtible charms which render the paſſions ſubſervient to the power of well modulated ſounds, and inſpire the mind with the moſt exalted ſentiments. One admires a fine voice, another a delicate touch, another what he calls a brilliant finger; and many are pleaſed with that muſic which appears moſt difficult in the execution, and in judging of their own feelings, miſtake wonder for delight.

To remove the numberleſs prejudices reſpecting muſic, which thoſe only entertain who are ignorant of the ſcience, or are miſtaken in its nature and end; to point out its various excellencies, and to aſſert its dignity, as a ſcience worthy the exerciſe of our rational as well as audible faculties, the only effectual way ſeems to be to inveſtigate its principles, as founded in general and invariable laws, and to trace the improvements therein which have reſulted from the accumulated ſtudies and experience of a long ſucceſſion of ages, ſuch a detail is neceſſary to reduce the ſcience to a certainty, and to furniſh a ground for criticiſm; and may be conſidered as a branch of literary hiſtory, of the deficiency whereof Lord Bacon has declared his ſentiments in the following emphatical terms:

'Hiſtory is Natural, Civil, Eccleſiaſtical, and Literary; whereof 'the three firſt I allow as extant, the fourth I note as deficient. For

'no

'no man hath propounded to himſelf the general ſtate of learning to 'be deſcribed and repreſented from age to age, as many have done 'the works of nature, and the ſtate civil and eccleſiaſtical; without 'which the hiſtory of the world ſeemeth to me to be as the ſtatue of 'Polyphemus with his eye out, that part being wanting which doth 'moſt ſhew the ſpirit and life of the perſon. And yet I am not ig-'norant, that in divers particular ſciences, as of the juriſconſults, the 'mathematicians, the rhetoricians, the philoſophers, there are ſet 'down ſome ſmall memorials of the ſchools, authors, and books; and 'ſo likewiſe ſome barren relations touching the invention of arts or 'uſages.

'But a juſt ſtory of learning, containing the antiquities and ori-'ginals of knowledges and their ſects, their inventions, their tra-'ditions, their diverſe adminiſtrations and managings, their flouriſh-'ings, their oppoſitions, decays, depreſſions, oblivions, removes; 'with the cauſes and occaſions of them, and all other events concern-'ing learning, throughout the ages of the world, I may truly affirm 'to be wanting *.'

If any thing can be neceſſary to enforce arguments ſo weighty as are contained in the above paſſage, it muſt be inſtances of error, reſulting from the want of that intelligence which it is the buſineſs of hiſtory to communicate; and it is greatly to be lamented that muſic affords more examples of this kind than perhaps any ſcience whatever: for, not to remark on thoſe uncertain and contradictory accounts which are given of the diſcovery of the conſonances, ſome writers attributing it to Pythagoras, others to Diocles, that relation of the fact which has gained moſt credit with mankind, as deriving its authority from the Pythagorean ſchool, is demonſtrably falſe and erroneous †. Again, as to the invention of ſymphoniac harmony, or, as we now call it, muſic in parts, many aſcribe it to the ancients, and ſay that it was in uſe among the Greeks, though no evidence of

* Of the Advancement of Learning, book II.

† Vide infra, vol. I. page 29, et ſeq.

the fact can be drawn from their writings now extant. Others assert it to be a modern improvement, but to whom it is due no one has yet been able to discover.

As to the modern system, there is the irrefragable evidence of his own writings extant, though not in print, that it was settled by Guido Aretinus, a Benedictine monk of the monastery of Pomposa in Tuscany, who flourished about the year 1028; yet this fact, which is also related as an important event in the Annales Ecclesiastici of Cardinal Baronius, has been rendered doubtful by an assertion of a writer now living, Signor Martinelli, that one of the same name and place, Fra Guittone d'Arezzo, an Italian poet of great eminence, and who lived about two hundred years after, adjusted that musical scale by which we now sing *; and further that the same Fra Guittone was the inventor of counterpoint. Again, those who give the invention of the modern system, and the application thereto of the syllables used in solmisation to the true author, ascribe also to him the invention of music in consonance, and also of the Clavicembalum or harpsichord; whereas the harpsichord is an improvement of the Clavicitherium, an instrument known in England in Gower's time by the name of the Citole, from CISTELLA, a little chest. Another writer asserts, on what authority we are not told, that counterpoint, which implies music in consonance, was invented by John of Dunstable, who flourished anno 1400; and another †, mistaking the name,

* 'Fra Guittone d'Arezzo, celebre per i suoi scritta sopra la musica, inventore 'del contrappunto, e dal quale furono fissati i tuoni, che presentemente si cantano.' Lettere familiari e critiche di Vincenzio Martinelli, Londra, 1758. Prefazione, pag. viii. This person had undertaken to write a history of music. See his letters above cited, pag. 164, containing an apology for his not having published it.

Of this Fra Guittone an account may be seen in the Istoria della volgar Poesia of Crescimbeni, lib. II. pag. 84. He flourished about 1250, and is celebrated among the best of the ancient Tuscan poets. In the same work, lib. III. pag. 176, is a sonnet of his writing; and in Mr. Baretti's History of the Italian Tongue, prefixed to his Italian library, page ix. is a fable of Fra Guittone, which Baretti says might be taken for a composition of yesterday.

† Wolfgang Caspar Printz, in his History of Music, written in the German language, and published at Dresden in the year 1690, who has given a relation pur-

attributes it to St. Dunſtan, archbiſhop of Canterbury. Mr. Marpourg of Berlin, a perſon now living, has taken up this relation, groundleſs as it is, and in a book of his writing, entititled 'Traité de 'la Fugue et du Counterpoint,' has done little leſs than aſſert that St. Dunſtan invented counterpoint, by reducing into order the rules for compoſition in four parts, and not a few give credit to his teſtimony *.

Again we are told, that whereas the Greeks ſignified the ſeveral ſounds in their ſcale by the letters of their alphabet, or by characters derived from them, Guido invented a more compendious method of notation, by points ſtationed on a ſtave of five lines, and occupying both the lines and the ſpaces. This aſſertion is true but in part; for the ſtave, and that of many lines, was in uſe near half a century before Guido was born; and all that can be aſcribed to him is the placing points as well in the ſpaces as on the lines, which it muſt be owned is an ingenious and uſeful contrivance.

To aſſiſt the memory and facilitate the practice of ſolmiſation, it is alſo ſaid that Guido made uſe of the left hand, giving to the top of the thumb the note ΓAM UT, to the joint below it A RE, to the next B MI, and ſo on, placing the higheſt note of his ſyſtem, E LA, at the extremity of the hand, viz. the tip of the middle finger; but nothing of this kind is to be found, or indeed is mentioned, or even hinted at, in any of his writings, and we may therefore conclude that the whole is an invention of ſome other perſon.

purporting that 'In the year of our Lord 940, Dunſtan, otherwiſe Dunſtaphus, 'an Engliſhman, being very young, betook himſelf to the ſtudy of muſic, and 'thereby acquired immortal fame. He was the firſt that compoſed ſongs of dif-'ferent parts, that is to ſay, Baſs, Tenor, Deſcant, and Vagant or Alt,' pag. 104, ſect. 23. The whole relation is an error, ariſing from a miſtaken ſenſe of a paſſage in the Præceptiones Muſices Poeticæ of Johannes Nucius, a writer on muſic in the year 1613. Vide infra, vol. II. page 18, n. 298, n. vol. IV. 248, n.

* 'Dunſtan, Archevêque de Canterbory, qui vivoit dans le dixième ſiècle, a toû-'jours eu l'honneur d'avoir commencé, ainſi que d'avoir frayé le chemin aux autres. 'Il redigea en ordre le regles de la compoſition à quatre parties & par là donna 'une nouvelle époque à la muſique.' Partie II. pag. vi.

Little

Litt'e leſs confuſion attends the relations extant reſpecting the invention of the Cantus Menſurabilis, and thoſe marks or characters uſed to ſignify the ſeveral lengths or durations of notes. The vulgar tale is, that John de Muris, a Norman, and a doctor of the Sorbonne about the year 1330, invented eight muſical characters, namely, the Maxima, or as we call it, the Large, the Long, the Breve, Semibreve, Minim, Semiminim or Crotchet, Chroma or Quaver, and the Semichroma, aſſigning to each a ſeveral length in reſpect of time or duration *. Now upon the face of the relation there is great reaſon to conclude, that in the original inſtitution of the Cantus Menſurabilis, the ſemibreve was the ſhorteſt note; but there is undeniable evidence that as well the minim as the notes in ſucceſſion after it, were of comparatively late invention.

But this is not all; De Muris was not a Norman, but an Engliſhman: He was not the inventor of the Cantus Menſurabilis: Not he, but a perſon of the name of Franco, a ſcholaſtic, as he is called, of Liege, about the middle of the eleventh century invented certain characters to ſignify the duration of ſounds †, that is to ſay, the four firſt abovementioned.

Another prevailing error reſpecting muſic has got poſſeſſion of the minds of many people, viz. that thoſe ſingularly ſweet and pathetic melodies with which the Scots muſic abounds, were introduced into it by David Rizzio, an Italian muſician, and a favourite of Mary queen of Scots: The reverſe is the truth of the matter, and that by the teſtimony of Italians themſelves; the Scots tunes are the genuine produce of Scotland; thoſe of greateſt merit among them are compoſitions of a king of that country; and of theſe ſome of the moſt celebrated madrigals of one of the greateſt of the Italian compoſers are avowed imitations ‡.

* Nicola Vicentino, a writer of the ſixteenth century, with ſome degree of ingenuity, attempts to ſhew that theſe characters are but different modifications of the round and ſquare b, which had been introduced into Guido's ſcale for another purpoſe.

† Vide infra, vol. II. pag. 140, 150, 237.

‡ Vol. IV. page 5.

Again,

Again, few are ſufficiently acquainted with the hiſtory of the ſcience, and in particular how long the ſeveral muſical inſtruments now known by us have been in uſe, to prevent being impoſed on by pretended new inventions: The harp of Æolus, as it is called, on which ſo much has been lately ſaid and wrote, was conſtructed by Kircher above a century ago, and is accurately deſcribed in his Muſurgia; as is alſo the perpendicular harpſichord, and an inſtrument ſo contrived as to produce ſound by the friction of wheels, from which the modern lyrichord is manifeſtly taken. The new ſyſtem, as it is called, of the flute abec, propoſed about forty years ago by the younger Staneſby, is in truth the old and original ſyſtem of that inſtrument, and is to be found in Merſennus; and the clarinet, an inſtrument unknown in England till within theſe laſt twenty years, was invented by John Chriſtopher Denner, a wind muſical inſtrument maker of Leipſic above a century ago *.

Farther, it has for the honour of this our native country been ſaid of Purcell, that his muſic was very different from the Italian; that it was entirely Engliſh, that it was maſculine †. Againſt the two firſt of theſe aſſertions we have his own teſtimony in the preface to one of his works, wherein he ſays that he has endeavoured at a juſt imitation of the moſt famed Italian maſters, with a view, as he adds, to bring the gravity and ſerioufneſs of that ſort of muſic into vogue ‡. As to the third, the judicious peruſer of his compoſitions will find that they are ever ſuited to the occaſion, and are equally calculated to excite tender, and robuſt or manly affections.

Laſtly, of the many who at this time profeſs to love muſic, few are acquainted with the characters, and even the names of thoſe many eminent perſons celebrated for their ſkill and great attainments in the ſcience, and who flouriſhed under the patronage of the greateſt potentates, previous to the commencement of the preſent century; and,

* Vide infra vol. IV. page 249.

† Granger's Biographical Hiſtory of England, as it is called, vol. II. part II. claſs X. tit. MUSICIANS, art. HENRICUS PURCELL.

‡ Vide infra vol. IV. page 497.

with reſpect to thoſe of our own country, it is true there is ſcarce a boy in any of the choirs in the kingdom but knows that Tallis and Bird compoſed anthems, and Child, Batten, Rogers, and Aldrich ſervices; but of their compoſitions at large, and in what particulars they excelled, even their teachers are ignorant.

Under a thorough conviction of the benefits that muſt reſult from the kind of intelligence here recommended, attempts have been made at different periods to trace the riſe and progreſs of muſic in a courſe of hiſtorical narration; and let it not be deemed an invidious office, if thoſe defects in the attempts of others are pointed out, which alone can juſtify the preſent undertaking.

In the Menagiana, tome I. page 303, mention is made of a canon of Tours of the name of Ouvard, who wrote a hiſtory of muſic: Mattheſon, in his Vollkommenen Capellmeiſter, takes notice of this work, and ſays that it comes down to the end of the ſeventeenth century, and is perhaps extant in MS. in ſome library at Paris. But the firſt attempt of this kind in print is a treatiſe of Johannes Albertus Bannius, 'De Muſicæ origine, progreſſu et deniquè ſtudio bene inſtituendo,' publiſhed in 1637, in octavo.

Next to this, in point of time, is the Hiſtory of Muſic of Wolfgang Caſpar Printz, chapel-maſter and director of the choir of the church of Sorau, printed at Dreſden in the year 1690, in a ſmall quarto volume, with the title of 'Hiſtoriche Beſchreibung der Edelen Sing- und Klingkunſt.' Neither of the two latter works can be conſidered as a hiſtory of the ſcience; the firſt of them is a very ſmall volume, and the other not a large one, containing little more than a liſt of writers on muſic diſpoſed in chronological order.

The appendix of Dr. Wallis to his edition of Ptolemy, publiſhed in 1682, though not a hiſtory of the ſcience, contains many hiſtorical particulars reſpecting muſic, beſides that in ſundry inſtances it renders intelligible the doctrines of the ancient writers. It is written with great accuracy and perſpicuity, and abounds with inſtances of that acuteneſs and penetration for which the author is celebrated.

In

In 1683, the Sieur Gabriel Guillaume Nivers, organiſt of the chapel of Lewis XIV. publiſhed 'Diſſertation ſur le Chant Gregorien,' a ſmall octavo volume, but in effect a hiſtory of eccleſiaſtical muſic, with a relation of the many corruptions it has undergone. In it are many curious paſſages relating to the ſubject, extracted from the fathers and the ritualiſts, with the obſervations of the author, who appears to have been a learned man in his profeſſion.

In 1695 Gio. Andrea Angelini Bontempi, of Perugia, publiſhed in a thin folio volume a work of ſome merit, entitled 'Hiſtoria Muſica.' Berardi mentions a work of one Pietro Arragona, a Florentine, entitled 'Iſtoria Armonica,' but Broſſard doubts the exiſtence of it *.

A hiſtory of the pontifical chapel, and of the college of ſingers thereto belonging, is contained in a work entitled 'Oſſervazioni per 'ben regolare il Coro de i Cantori della Cappella Pontificia, tanto 'nelle Funzioni ordinarie, che ſtraordinarie,' by Andrea Adami da Bolſena, Maeſtro della Cappella Pontificia, publiſhed at Rome in 1711, in a quarto volume. In this book are many curious particulars.

There is alſo extant in two volumes duodecimo, but divided into four, a book entitled 'Hiſtoire de la Muſique et de ſes Effets,' printed firſt at Paris in 1715, and afterwards at Amſterdam in 1725. The materials for this publication were certain papers found in the ſtudy of the Abbé Bourdelot, and others of his nephew Bonnet Bourdelot, phyſician to the king of France, the letters of the Abbé Raguenet and others, on the comparative merits of the Italian and French opera and muſic, together with ſundry other papers on the ſame ſubject. The publiſher was Bonnet, a nephew of the Abbé Bourdelot; and the beſt that can be ſaid of the work is, that the whole is a confuſed jumble of intelligence and controverſy; and, ſaving that it contains ſome curious memoirs of Lully and a few other of the French muſicians, has very little claim to attention.

* Catalogue of writers on muſic at the end of his 'Dictionnaire de Muſique,' octavo, page 369.

About the year 1730, Mr. Peter Prelleur, an able muſician and organiſt, publiſhed a work entitled 'The modern Muſic-maſter, containing an introduction to ſinging, and inſtructions for moſt of the inſtruments in uſe.' At the end of this book is a brief hiſtory of muſic, in which are ſundry particulars worth noting: it has no name to it, but was nevertheleſs compiled by the above perſon.

John Godfrey Walther, a profeſſor of muſic, and organiſt of the church of St. Peter and Paul at Weimar, publiſhed in 1732 a muſical Lexicon or Bibliotheque, wherein is a great variety of information reſpecting muſic and muſicians of all countries and ages. Mattheſon of Hamburg, in his 'Critica Muſica,' his 'Orcheſtre,' and a work entitled 'Vollkommenen Capellmeiſter,' i. e. the perfect Chapelmaſter, has brought together many particulars of the like kind; but the want of method renders theſe compoſitions, in an hiſtorical view, of little uſe.

In the year 1740, an ingenious young man of the name of Graſſineau *, publiſhed a Dictionary of Muſic in one octavo volume, with a recommendation of the work by Dr. Pepuſch, Dr. Greene, and Mr. Galliard. The book had the appearance of a learned work, and all men wondered who the author could be: It ſeems he had been an amanuenſis of the former of theſe perſons. The foundation of this dictionary is a tranſlation of that of Sebaſtian Broſſard; the additions include all the muſical articles contained in the two volumes of Chambers's Dictionary, with perhaps a few hints and emendations furniſhed by Dr. Pepuſch. The book nevertheleſs abounds with errors, and, though a uſeful and entertaining publication, is not to be relied on.

In 1756, Fr. Wilhelm Marpourg, a muſician of Berlin, publiſhed in a thin quarto volume, 'Traite de la Fugue et du Contrepoint,' the the ſecond part whereof is a brief hiſtory of counterpoint and fugue. The ſame perſon is alſo the author of a work entitled 'Critiſche 'Einleitung in die Geſchichte und Lehrſake der alten und neuen Muſick,' printed at Berlin in 1759. It is part of a larger work, and the remainder is not yet publiſhed.

* See an account of him vol. I. page 86, in the notes.

The

The 'Storia della Muſica' of Padre Martini of Bologna, of which as yet only two volumes have been publiſhed, and thoſe at the diſtance of thirteen years from each other, is a learned and curious work; but the great ſtudy and labour beſtowed by the author in compiling it, make us deſpair of ever ſeeing it completed.

The 'Hiſtoire generale, critique, et philologique de la Muſique,' of Monſ. De Blainville, printed at Paris in 1767, in a thin quarto volume, has very little pretence to the title it bears: Like ſome other works of the kind, it is diffuſe where it ought to be ſuccinct, and brief where one would wiſh to find it copious.

A character very different is due to a work in two volumes, quarto, entitled 'De Cantu et Muſica ſacra, a prima Eccleſiæ Ætate uſque ad 'præſens Tempus; Auctore Martino Gerberto, Monaſterii et Congre-'gationis Sancti Blaſii in Silva Nigra Abbate, Sacrique Romani Impe-'rii Princeps. Typis San-Blaſianis, 1774.' In this moſt valuable work the author has with great learning, judgment, and candour given the hiſtory of eccleſiaſtical muſic; and the author of the preſent work felicitates himſelf on the finding his ſentiments on the ſubject, particularly of the church compoſers, and the corruptions of the church ſtyle, confirmed by the teſtimony of ſo able a writer. He is farther happy to ſee that without any communication with this illuſtrious dignitary, and without having peruſed his book, by the help of materials, which this country alone has furniſhed, he has been able to purſue a ſimilar track of narration, and to relate and authenticate many facts contained therein *.

At the beginning of this preſent year 1776, the muſical world were favoured with the firſt volume of a work entitled 'A General 'Hiſtory of Muſic from the earlieſt Ages to the preſent Period, with 'a Diſſertation on the Muſic of the Ancients, by Charles Burney, 'Muſ. D. F. R. S.' The author in the propoſals for his ſubſcription

* The fact is, that the fifth volume of this work was printed off in July in the preſent year, and the former ones in ſucceſſion in the years preceding, and the two volumes of the Abbot Gerbert's work came to hand in the month immediately following.

has

has given aſſurances of the publication of a ſecond, which we doubt not he will make good.

From thoſe who have thus taken upon them to trace the riſe and progreſs of muſic in a courſe of hiſtorical deduction, we paſs to others who appear to have made collections for the like purpoſe, but were defeated in their intentions of benefiting the ſcience by their labours.

And firſt Anthony Wood, who himſelf was a proficient in muſic, and entertained an enthuſiaſtic fondneſs for the art, had it ſeems meditated a hiſtory of muſicians, a work which his curioſity and unwearied induſtry rendered him very fit for: To this end he made a collection of memoirs, which is extant, in his own hand-writing, among the manuſcripts in the Aſhmolean Muſeum; and in the printed catalogue thereof is thus numbered and deſcribed: '8568. 106. Some 'materials toward a hiſtory of the lives and compoſitions of all Eng-'liſh muſicians; drawn up according to alphabetical order in 210 'pages by A. W.' Of theſe materials he ſeems to have availed himſelf in the Faſti Oxonienſes, wherein are contained a great number of memoirs of eminent Engliſh muſicians, equally curious and ſatisfactory, the peruſal whereof in the original MS. has contributed to render this work ſomewhat leſs imperfect than it muſt have been without ſuch information as they afford.

Dr. Henry Aldrich, dean of Chriſt Church, an excellent ſcholar, and of ſuch ſkill in muſic, that he holds a place among the moſt eminent of our Engliſh church muſicians, had formed a deſign of a hiſtory of muſic on a moſt extenſive plan. His papers in the library of Chriſt Church college, Oxford, have been carefully peruſed: Among them are a great number of looſe notes, hints, and memoranda relating to muſic and the profeſſors of the ſcience; in the collection whereof he ſeems to have purſued the courſe recommended by Broſſard in the catalogue of writers on muſic at the end of his Dictionnaire de Muſique, page 367; but among a great multitude of papers in his own hand-writing there are none to be found from whence it can with certainty be concluded that he had made any progreſs in the work.

Nicola

Nicola Franceſco Haym, a muſician, and a man of ſome literature, publiſhed, above forty years ago, propoſals, containing the plan of a hiſtory of muſic written by himſelf, but, meeting with little encouragement, he deſiſted from his deſign of printing it.

Much intelligence reſpecting muſic might have been hoped for from the abilities and induſtry of Aſhmole, Dr. Hooke, and Sir William Petty, the two former of whom had been choriſters, the one in the cathedral of Litchfield, the other of Chriſt Church, Oxford: The latter of the three was profeſſor of muſic at Greſham college; but theſe perſons abandoning the faculty in which they had been inſtituted, betook themſelves to ſtudies of a different kind: Aſhmole, at firſt a ſolicitor in Chancery, became an antiquary, a herald, a virtuoſo, a naturaliſt, and an Hermetic philoſopher: Hooke took to the ſtudy of natural philoſophy, mechanics, and architecture, and attained to great ſkill in all *: And Petty, chooſing the better part, laid the foundation

* It is ſaid by Anthony Wood of Dr. Hooke, that, being at Weſtminſter-ſchool, he lodged and dieted in the houſe of Mr. Buſby, the maſter, and that there, of his own accord, he learned to play twenty leſſons on the organ, and invented thirty ſeveral ways of flying. Athen. Oxon. vol. II. col. 1039. The latter of theſe facts muſt ſtand on the authority of the relator, or rather his authors, Dr. Buſby and the great Dr. Wilkins of Wadham college; but the former is rendered highly probable by the following anecdote reſpecting Dr. Buſby, the communication whereof we owe to Dr. Wetenhall, one of Buſby's ſcholars, and afterwards biſhop of Cork and Roſs, viz. that 'the firſt organ he ever ſaw or heard was in his, Dr. 'Buſby's, houſe; and that the ſame was kept for ſacred uſe, and that even when 'it was interdicted.' Dedication of a treatiſe entitled 'Of Gifts and Offices in 'the public Worſhip of God, by Edward Wetenhall, D. D. Chanter of Chriſt 'Church, Dublin, 8vo. 1679.' That he was alſo eminently ſkilled in architecture, may be inferred from an aſſertion of Dr. Ward, in his life of Sir Chriſtopher Wren, among the Greſham profeſſors, viz. that he greatly aſſiſted Sir Chriſtopher in rebuilding the public edifices. Wood goes ſo far as to ſay that Hooke deſigned New Bedlam, Montague-houſe, the college of phyſicians, and the pillar on Fiſh-ſtreet Hill; but the erection of the latter of theſe edifices is aſcribed to Sir Chriſtopher Wren. As to Montague-houſe and the College of Phyſicians, there are in Moxon's Mechanic Exerciſes, under the head of Bricklayer's Work, intimations that they were both deſigned by Hooke; and Strype, in his edition of Stowe's Survey of London, ſpeaking of Aſke's hoſpital at Hoxton, ſays it was built after a modern deſign of Dr. Hooke.

Of

of an immenſe eſtate by a various exertion of his very great talents, and was ſucceſſively a phyſician, a mathematician, a mechanic, a projector, a contractor with the government, and an improver of land.

Enough it is preſumed has been ſaid to prove the utility, and even the neceſſity, in order to a competent knowledge of the ſcience, of a Hiſtory of Muſic, in the deduction whereof the firſt object that preſents itſelf to view is the ſyſtem of the ancient Greeks, adjuſted, it muſt be confeſſed, with great art and ingenuity, but labouring under many defects, which, if we are not greatly deceived, are remedied in that of the moderns. Of the origin of this ſyſtem we have ſuch authentic intelligence as leaves little room to doubt that it was invented by Pythagoras, a name ſufficiently known and revered, and the ſubſequent deduction of the progreſs of the ſcience, involving in it the names and improvements of men well known, ſuch as Philolaus, Archytas of Tarentum, Ariſtoxenus, Euclid, Nicomachus, Ptolemy, and many others, may truly be called hiſtory, as being founded in truth; and the utility and certainty of their relations will teach us to diſtinguiſh between fact and fable.

It is much to be lamented that the greater part of what we believe touching muſic, is founded on no better authority than the fictions of poets and mythologiſts, whoſe relations are in moſt inſtances merely typical and figurative; ſuch muſt the ſtories of Orpheus and Amphion appear to be, as having no foundation in truth, but being calculated ſolely for the purpoſe of moral inſtruction.

And with regard to facts themſelves, a diſtinction is to be made between ſuch as are in their own nature intereſting, and thoſe that tend only to gratify an idle curioſity: To inſtance in the latter, what

Of this latter perſon it may be ſaid, that he was perhaps one of the greateſt proficients in the art of thriving of his time: By places, by projects, and by grants, ſome to himſelf, and others to his wife, he acquired eſtates, real and perſonal, to the annual amount of 15,000l. to the accumulation of which wealth we may well ſuppoſe that the virtue of parſimony contributed not a little, and the rather as he ſuffered a natural daughter of his to be an actreſs on the ſtage under Sir William D'Avenant at the Duke's theatre in Dorſet-Garden.

ſatis-

ſatisfaction does the mind receive from the recital of the names of thoſe who are ſaid to have increaſed the chords of the primitive lyre from four to ſeven, Chorebus, Hyagnis, and Terpander; or when we are told that Olympus invented the enarmonic genus, as alſo the Harmatian mood; or that Eumolpus and Melampus were excellent muſicians, and Pronomus, Antigenides, and Lamia celebrated players on the flute? In all theſe inſtances, where there are no circumſtances that conſtitute a character, and familiarize to us the perſon ſpoken of, we naturally enquire who he is; and, for want of farther information, become indifferent as to what is recorded of him.

Mr. Wollaſton has a remark upon the nature of fame that ſeems to illuſtrate the above obſervation, and indeed goes far beyond the caſe here put, inaſmuch as the perſons by him ſpoken of, are become well known characters: his words are theſe: 'When it is ſaid that 'Julius Cæſar ſubdued Gaul, beat Pompey, changed the Roman 'commonwealth into a monarchy, &c. it is the ſame thing as to ſay, 'the conqueror of Pompey was Cæſar; that is, Cæſar and the con-'queror of Pompey are the ſame thing; and Cæſar is as much known 'by one deſignation as the other. The amount then is only this: 'That the conqueror of Pompey conquered Pompey; or ſomebody 'conquered Pompey; or rather, ſince Pompey is as little known as 'Cæſar, ſomebody conquered ſomebody *.'

That memorials of perſons, who at this diſtance of time muſt appear thus indifferent to us, ſhould be tranſmitted down to poſterity, together with thoſe events that make a part of muſical hiſtory, is not to be wondered at; and Plutarch could never have recorded the facts mentioned by him in his Dialogue on Muſic, had he not alſo given the names of thoſe perſons to whom they are ſeverally aſcribed; and if they now appear unintereſting we may reject them: But the caſe is far otherwiſe with reſpect to what is told us of the marvellous power and efficacy of the ancient muſic. Ariſtoxenus expreſsly aſ-

* Religion of Nature delineated, page 117.

ſerts that the foundation of ingenuous manners, and a regular and decent diſcharge of the offices of civil life, are laid in a muſical education; and Plutarch, ſpeaking of the education of Achilles, and relating that the moſt wiſe Chiron was careful to inſtruct him in muſic, ſays, that whoever ſhall in his youth addict himſelf to the ſtudy of muſic, if he be properly inſtructed therein, ſhall not fail to applaud and practiſe that which is noble and generous, and deteſt and ſhun their contraries: Muſic teaching thoſe that purſue it to obſerve decorum, temperance, and regularity; for which reaſon he adds, that in thoſe cities which were governed by the beſt laws, the greateſt care was taken that their youth ſhould be taught muſic. Plato, in his treatiſe De Legibus, lib. II inſiſts largely on the utility of this practice; and Polybius, lib. IV. cap. iii. ſcruples not to attribute the misfortunes of the Cynetheans, a people of Arcadia, and that general corruption of their manners, by him deſcribed, to the neglect of the diſcipline and exerciſe of muſic; which he ſays the ancient Arcadians were ſo induſtrious to cultivate, that they incorporated it into, and made it the very eſſence of, their government; obliging not their children only, but the young men till they attained the age of thirty, to perſiſt in the ſtudy and practice of it. Innumerable alſo are the paſſages in the ancient writers on harmonics wherein the power of determining the minds of men to virtue or vice is aſcribed to muſic with as little doubt of its efficacy in this reſpect, as if the human mind was poſſeſſed of no ſuch power as the will, or was totally diveſted of thoſe paſſions, inclinations, and habits, which conſtitute a moral character.

Now, foraſmuch as we at this day are incapable of diſcovering any ſuch power as is here attributed to mere muſical ſounds, we ſeem to be warranted in withholding our aſſent to theſe relations, till the evidence on which they are grounded becomes more particular and explicit; or it ſhall be ſhewn that they are not, what ſome men conceive them to be, hyperbolical forms of ſpeech, in which the literal is as far from the true ſenſe, as it is in the ſtories of the effects of muſic

on

on inanimate beings: If indeed by muſic we are to underſtand muſical ſounds jointly operating with poetry, for this reaſon that muſic is ever ſpoken of by the ancients as inſeparably united with poetry; and farther, becauſe we are told that the ancient poets, for inſtance, Demodocus, Thaletas of Crete, Pindar, and others, not only compoſed the words, but alſo the muſic to their odes and pœans, and ſung them to the lyre, a degree of efficacy muſt be allowed it, proportioned to the advantages which it could not but derive from ſuch an union *: But

* Quintilian has elegantly expreſſed his ſenſe of the joint efficacy of muſic and poetry in the following paſſage: 'Namque et voce et modulatione grandia 'elatè, jucunda dulciter, moderata leniter canit, totâque arte conſentit cum eorum, 'quæ dicuntur, affectibus.' Inſt. Orat. lib. I. cap. x.

But, notwithſtanding this obſervation, which, as far as it goes, muſt be allowed to be juſt, the powers of muſic will be found inadequate to the expreſſion of many of thoſe ſentiments in poetry which are comprehended in the ideas of the beautiful and the ſublime; ſuch, for inſtance, as theſe:

Where glowing embers round the room
Teach light to counterfeit a gloom,

Where I may oft outwatch the bear,
With thrice great Hermes, and unſphere
The ſpirit of Plato to unfold
What worlds or what vaſt regions hold
The immortal mind.

Sentiments that defy the utmoſt powers of muſic to ſuit them with correſpondent ſounds.

Nor will it be found that the melody or the cadence of ſounds are either of them ſo peculiarly appropriated to particular paſſions or deſcriptions, as to rank the faculty of expreſſion among the principal excellencies of muſic. And in proof of this aſſertion ſome examples might be given that would ſtagger an infidel in theſe matters. The late Dr. Brown, when he had wrote his ode entitled the Cure of Saul, for the muſic to it made a ſelection from the works of the moſt celebrated compoſers, of ſuch favourite movements as he thought would beſt expreſs the ſenſe of the words; in particular he took the ſaraband in the eighth ſonata of Corelli's ſecond opera for a ſolo air; and that moſt divine movement in Purcell's 'O give thanks,' 'Remember me O Lord,' for a chorus; and any ſtranger would have thought that the muſic had been originally compoſed to the words; The muſic to that admired

here a difficulty will ariſe, which, though it does not deſtroy the credit of theſe reports, as they ſtand on the footing of other hiſtorical facts, would incline us to ſuſpect that the muſic here ſpoken of was of a kind very different from what it is in general conceived to be, and that for the following reaſon:

We know by experience that there is no neceſſary connexion between muſic and poetry; and ſuch as are competent judges of either, know alſo that though the powers of each are in ſome inſtances concurrent, each is a ſeparate and diſtinct language: The poet affects the paſſions by images excited in the mind, or by the forcible impreſſion of moral ſentiments; the muſician by ſounds either ſimple and harmonical only in ſucceſſion, or combined: Theſe the mind, from its particular conſtitution, ſuppoſing it endued with that ſenſe which is the perfection of the auditory faculty, without referring to any other ſubject or medium, recognizes as the language of nature; and the affections of joy, grief, and a thouſand nameleſs ſenſations, become ſubſervient to their call.

As the powers of muſic and poetry are thus different, it neceſſarily follows that they may exiſt independent of each other; and the inſtances are as numerous of poets incapable of articulating muſical ſounds, as of muſicians unpoſſeſſed of a talent for poetry.

If then the poets of the ancients were only ſuch as to the harmony of their verſe were capable of joining that of muſic, by compoſing muſical airs, and alſo ſinging them, and that to an audience grounded and well inſtructed in muſic, what can we ſuppoſe the muſic of their odes to have been? Perhaps little elſe than bare recitation; not

ſong in Samſon, 'Return O God of hoſts,' was taken from an Italian cantata of Mr. Handel, compoſed in his youth; as was alſo the muſic to the other, 'Then 'long eternity,' in the ſame oratorio: Farther, the chorus in Alexander's Feaſt, 'Let old Timotheus yield the prize,' ſaving the addition of one of the interior parts, was originally an Italian trio; as was alſo that in the Il Penſeroſo, 'Theſe 'pleaſures melancholy give.' Finally, a great part of the muſic to Mr. Dryden's leſſer ode for St. Cecilia's Day was originally compoſed by Mr. Handel for an opera entitled Alceſte, written by Dr. Smollet, but never performed.

in

in true muſical intervals, but with ſuch inflexions of the voice as accompany ſpeech when calculated to make a forcible impreſſion on the hearers.

As to the relations of the effects of muſic in former ages on the paſſions of men, and of its provoking them to acts of deſperation, it may be ſaid that they afford no greater proofs of its influence on the paſſions than modern hiſtory is capable of furniſhing *. But there

* Vide infra, vol. I. page 317, 318, n. and Plutarch relates that Antigenides, the tibiciniſt, playing before Alexander the Great, in a meaſure of time diſtinguiſhed by the name of the Harmatian mood, enflamed the hero to ſuch a degree, that, leaping from his ſeat, and drawing his ſword, he in a frenzy of courage aſſailed thoſe who were neareſt him. In Orat. II. De Fortun. vel Virtut. Alexandr. Magn.

To theſe inſtances may be oppoſed the following, which modern hiſtory affords: The firſt is related of Ericus, king of Denmark, ſurnamed the Good, who reigned about 1130, and is to the following purport. When Ericus was returned into his kingdom, and held the yearly aſſembly, he was greatly pleaſed with the induſtry both of his ſoldiers and artificers. Among other of his attendants was a muſician, who aſſerted that by the power of his art he was able to excite in men whatſoever affections he thought proper; and to make the ſad chearful, the chearful ſad, the angry placid, and ſuch as were pleaſed diſcontented, and even drive them into a raging madneſs; and the more he inſiſted on his abilities the greater was the king's deſire to try them. The artiſt now began to repent his having thus magnified his talent, foreſeeing the danger of making ſuch experiments on a king, and he was afraid that if he failed in the performance of what he had undertaken, he ſhould be eſteemed a liar; he therefore entreated all who had any influence over the king to endeavour to divert him from his intention to make proof of his art; but all without effect, for the more deſirous he was to evade the trial of his ſkill, the more the king inſiſted on it. When the muſician perceived that he could not be excuſed, he begged that all weapons capable of doing miſchief might be removed, and took care that ſome perſons ſhould be placed out of the hearing of the Cithara, who might be called in to his aſſiſtance, and were, if neceſſity required it, to ſnatch the inſtrument from his hands, and break it on his head. Every thing being thus prepared, the citharift began to make proof of his art on the king, who ſat with ſome few about him in an open hall; firſt, by a grave mode, he threw a certain melancholy into the minds of the auditors; but, changing it into one more chearful, he converted their ſadneſs into mirth that almoſt incited his hearers to dancing; then varying his modulation, on the ſudden he inſpired the king with fury and indignation, which he continued to work up in him till it was eaſy to ſee he was approach-

are others that ſtagger human belief, and leave us in doubt whether to give or refuſe credit to them; ſuch, for inſtance, are the ſtories of the cure of diſeaſes, namely the ſciatica, epilepſy, fevers, the bites of vipers, and even peſtilences, by the power of harmony.

What an implicit aſſent has been given to the reports of the ſovereign efficacy of muſic in the cure of the frenzy occaſioned by the bite of the Tarantula! Baglivi, an eminent phyſician, a native of Apulia, the country where the Tarantula, a kind of ſpider, is produced, has given the natural hiſtory of this ſuppoſed noxious inſect, and a variety of caſes of perſons rendered frantic by its bite, and reſtored to ſanity and the uſe of their reaſon; and in Kircher's Muſurgia we have the very air or tune by which the cure is ſaid to be effected. Sir Thomas Brown, that induſtrious exploder of vulgar errors, has let

appoaching to frenzy. The ſign was then given for thoſe who were in waiting to enter, they firſt broke the Cithara according to their directions, and then ſeized on the king; but ſuch was his ſtrength, that he killed ſome of them with his fiſt; being afterwards overwhelmed with ſeveral beds, his fury became pacified, and, recovering his reaſon, he was grievouſly afflicted that he had turned his wrath againſt his friends. Saxo Grammaticus, in Hiſt. Danicæ, edit. Baſil, lib. XII. pag. 113. The ſame author adds, that he broke open the doors of a chamber, and, ſnatching up a ſword, ran four men through the body; and that when he returned to his ſenſes he made a pilgrimage to Jeruſalem as an expiation of his crime. Olaus Magnus, who tells the ſame ſtory, ſays that he afterwards died in the iſland of Cyprus. Vide Olaus Magnus, in Hiſt. Gent. Sept. lib. XV. cap. xxviii. and Krantzius, in Chron. Regn. Daniæ, Sueciæ, et Norvegiæ.

Hieronymus Magius gives the following relation of a fact recent in memory in the year 1564: Cardinal Hippolyto de Medicis, being a legate in the army at Pannonia, the troops being about to engage, upon ſounding the alarm by the trumpets and drums, was ſo enflamed with a martial ardour, that, girding on his ſword, he mounted his horſe, and could not be reſtrained from charging the enemy at the head of thoſe whoſe duty it was to make the onſet. Var. Lect. ſeu Miſcell. Venet. 1564, lib. IV. cap. xiii.

And, laſtly, it is related, that at the celebration of the marriage of the duke of Joyeuſe, a gentleman was ſo tranſported with the muſic of Claude le Jeune, performed at that ſolemnity, that he ſeized his ſword, and ſwore that, unleſs prevented, he muſt fight with ſome one preſent; but that a ſudden change in the muſic calmed him. Bayle, art. GOUDIMEL, in not. Vide infra, vol. III. page 205.

this,

this, perhaps the moſt egregious of any that he has animadverted on, paſs as a fact not to be controverted; and Dr. Mead has ſtrengthened the belief of it by his reaſoning on the nature of poiſons. After all the whole comes out to be a fable, an impoſture calculated to deceive the credulous, and ſerve the ends of deſigning people inhabiting the country *.

The natural tendency of theſe reflections is to draw on a compariſon of the ancient with modern muſic; which latter, as it pretends to no ſuch miraculous powers, has been thought by the ignorant to be ſo greatly inferior to the former, as ſcarce to deſerve the name. In like manner do they judge of the characters of men, and the ſtate of human manners at remote periods, when they compare the events of ancient hiſtory, the actions of heroes, and the wiſdom of legiſlators, with thoſe of modern times, inferring from thence a depravity in mankind, of which not the leaſt trace is diſcernible.

This miſtaken notion ſeems to be but the neceſſary conſequence of that ſyſtem of education which directs the attention of young minds to the diſcoveries and tranſactions of the more early times; aſſigning, as the rule of civil policy, and the ſtandard of moral perfection and excellence in arts, the conduct, the lives and works of men whoſe greateſt atchievements are only wonderful as they were rare; whoſe valour was brutality, and whoſe policy was in general fraud, or at beſt craft; and whoſe inventions and diſcoveries have in numberleſs inſtances been ſuperſeded by thoſe of later times. To theſe, which we may call claſſical prejudices, we are to impute thoſe numerous and reiterated complaints which we meet with of the degeneracy of modern times; and when they are once imbibed, complaints of the declenſion of ſome arts, and of the loſs of others, as alſo of the corruption of manners, appear to be but of courſe. Whether therefore our reverence for antiquity has not been carried too far both as to matters of ſcience and morality, comprehending in the latter the virtue of juſtice, and the qualities of perſonal courage, general benevolence, and refined humanity, of which the examples

* Vide infra, vol. IV. page 216, n.

are

are not leſs numerous and conſpicuous in modern than in ancient hiſtory, is a queſtion well worthy conſideration *.

* In a book, which few readers at this day think worth looking into, Dr. Hakewill's Apologie for the Power and Providence of God, are the following ſentiments touching the reverence due to antiquity. 'Antiquity I unfeignedly honour 'and reverence; but why I ſhould reverence the ruſt and refuſe, the droſs and 'dregs, the warts and wens thereof, I am yet to ſeek.——As in the little, ſo in 'the great world, reaſon will tell you that old age or antiquity is to be accounted 'by the farther diſtance from the beginning, and the nearer approach to the end; 'and as grey beards are for wiſdom and judgment to be preferred before young 'green heads, becauſe they have more experience in affairs; ſo likewiſe for the 'ſame cauſe the preſent times are to be preferred before the infancy or youth of the 'world, we having the hiſtory and practice of former ages to inform us, which they 'wanted.——In diſgracing the preſent times you diſgrace antiquity properly ſo 'called.' Book V. page 133.

Farther to this purpoſe the learned and ſagacious Sir Thomas Brown delivers his ſentiments in the following terms: 'The mortalleſt enemy unto knowledge, and 'that which hath done the greateſt execution upon truth, hath been a peremptory 'adheſion unto authority; and more eſpecially the eſtabliſhing of our belief upon 'the dictates of antiquity. For, (as every capacity may obſerve) moſt men of ages 'preſent, ſo ſuperſtitiouſly do look upon ages paſt, that the authorities of the one 'exceed the reaſons of the other: Whoſe perſons indeed being far removed from our 'times, their works, which ſeldom with us paſs uncontrouled, either by contempo-'raries, or immediate ſucceſſors, are now become out of the diſtance of envies: 'And the farther removed from preſent times, are conceived to approach the nearer 'unto truth itſelf. Now hereby methinks we manifeſtly delude ourſelves, and wide-'ly walk out of the track of truth.

'For, firſt, men hereby impoſe a thraldom on their times, which the ingenuity of 'no age ſhould endure, or indeed the preſumption of any did ever yet enjoin. 'Thus Hippocrates, about two thouſand years ago, conceived it no injuſtice either 'to examine or refute the doctrines of his predeceſſors: Galen the like, and Ariſtotle 'the moſt of any. Yet did not any of theſe conceive themſelves infallible, or ſet 'down their dictates as verities irrefragable: But when they either deliver their own 'inventions, or reject other men's opinions, they proceed with judgment and in-'genuity: eſtabliſhing their aſſertions, not only with great ſolidity, but ſubmitting 'them alſo unto the correction of future diſcovery.

'Secondly, men that adore times paſt, conſider not that thoſe times were once 'preſent, that is, as our own are at this inſtant; and we ourſelves unto thoſe to 'come, as they unto us at preſent: As we rely on them, even ſo will thoſe on us,

'and

Of the loſs of many arts, that contribute as well to the benefit as delight of mankind, much has been ſaid; and there is extant a large volume, written in Latin by Guido Pancirollus, a lawyer of Padua, entitled 'De rebus memorabilibus deperditis et noviter inventis,' which has not eſcaped cenſure for the miſtakes and puerilities with which it abounds, the tendency thereof being to ſhew that many arts known to the ancients are either totally loſt, or ſo greatly depraved, that they can ſcarcely be ſaid to have an exiſtence among us *. In

'and magnifie us hereafter, who at preſent condemn ourſelves. Which very abſurdity is daily committed amongſt us, even in the eſteem and cenſure of our own times. And, to ſpeak impartially, old men, from whom we ſhould expect the greateſt example of wiſdom, do moſt exceed in this point of folly; commending the dayes of their youth, which they ſcarce remember, at leaſt well underſtood not; extolling thoſe times their younger years have heard their fathers condemn, and condemning thoſe times the gray heads of their poſterity ſhall commend. And thus is it the humour of many heads to extol the dayes of their fore-fathers, and declaim againſt the wickedneſs of times preſent. Which, notwithſtanding they cannot handſomly do, without the borrowed help and ſatyrs of times paſt, condemning the vices of their own times, by the expreſſions of vices in times which they commend; which cannot but argue the community of vice in both. Horace, therefore, Juvenal, and Perſius were no prophets, although their lines did ſeem to indigitate and point at our times. There is a certain liſt of vices committed in all ages, and declaimed againſt by all authors, which will laſt as long as humane nature; which, digeſted into common places, may ſerve for any theme, and never be out of date until Dooms-day.' Enquiries into Vulgar and Common Errours, Book I. Chap. vi.

* Of the many inſtances of arts or inventions loſt, or in a ſtate of depravity at this time, there are very few, if any, of which evidence can be found, or at leaſt that have not been ſucceeded by others tending to the ſame purpoſe, and of far greater utility. To inſtance in a few particulars, inſtead of the papyrus of the ancients, prepared from the leaves of a certain bulruſh, we have the paper of the moderns; in the room of their ſpecular ſtones, glaſs; and of clepſydræ, inſtruments that meaſured time by the dropping of water, or the falling of ſand, clocks and watches. As to the art of ſtaining or painting glaſs, which ceaſed to be practiſed about the Reformation, and has almoſt ever ſince been deplored as a loſt invention, it is effected by chemical means, and is at this day in as great perfection as ever. Vide Chambers's Dict. voce GLASS. Anecdotes of Painting in England by Mr. Horace Walpole, vol. II. page 15.

this book, which has proved a plentiful ſource of intelligence to ſuch as have laboured to depreciate all modern attainments, it is roundly aſſerted of muſic, which was anciently a ſcience, that there are not the leaſt footſteps remaining: and further, that the Cardinal of Ferrara, by whom it is ſuppoſed is meant Hippolyto de Eſte, the patron of Vicentino took great pains to recover it, but all to no purpoſe *.

Such as ſeem to have adopted the opinion of Pancirollus with reſpect to muſic, for example, Dr. Pepuſch, and a few of his diſciples, have aſſerted as an inſtance in ſupport of it, that the chromatic and enarmonic genera are now neither practiſed nor accurately known. Farther they add, that of the various modes of the ancients, only two are remaining, viz. thoſe which anſwer to the keys A and C; for, ſay they, the ancients took the tones and ſemitones in order as they naturally ariſe in the diapaſon ſyſtem, and, without any diſlocation of either, conſidered the progreſſion from any fundamental chord as a mode or key, and formed their melodies accordingly.

With regard to the enarmonic genus, it will in the enſuing volumes be ſhewn that the ancients themſelves ſuffered it to grow into diſuſe by reaſon of its intricacy; and therefore it cannot ſo properly be ſaid to have been loſt, as that it is rejected, and the rather as we are aſſured that Salinas and others have accurately determined it †: Of the chromatic as much ſeems to have been retained as is neceſſary to the perfection of the diatonic; and as to the modes, it will alſo be ſhewn that there never was, nor can there in nature be more, or any other than the two abovementioned; and conſequently that in this reſpect muſic has ſuſtained no injury at all.

The loſs of arts is a plauſible topic of declamation, but the poſſibility of ſuch a calamity by other means than a ſecond deluge, or the

* A like attempt was made in France in the year 1570, by the eſtabliſhment of an academy under the direction of Jean-Antoine Baïf and Joachim Theobalde de Courville, but through envy, as it is ſaid, the deſign failed. Merſennus in Queſt. et Explic. in Geneſin. art. XV. pag. 1683. Walth. Muſicaliſches Lexicon, voce ACADEMIE ROYALE DE MUSIQUE.

† Vide infra, vol. I. page 110.

inter-

interpoſition of any leſs powerful agent than God himſelf, is a matter of doubt; and when appearances every where around us favour the opinion of our improvement not only in literature, but in the ſciences and all the manual arts, it is wonderful that the contrary notion ſhould ever have got footing among mankind.

As to the general prejudices in behalf of antiquity, it has been hinted above that a reaſon for them is to be found in that implicit belief which the courſe of modern education diſpoſes us to entertain of the ſuperior virtue, wiſdom, and ingenuity of thoſe, who in all theſe inſtances we are taught to look on as patterns the moſt worthy of imitation; but it can never be deemed an excuſe of ſome writers for complimenting nations leſs enlightened than ourſelves with the poſſeſſion or enjoyment of arts which it is pretended we have loſt; as they do when they magnify the attainments of nations comparatively barbarous, and making thoſe countries on which the beams of knowledge can ſcarcely be ſaid to have yet dawned the theatres of virtue and the ſchools of ſcience, recommend them as fit exemplars for our imitation.

Of this claſs of authors, Sir William Temple and Iſaac Voſſius ſeem to be the chief; the one a ſtateſman retired from buſineſs, an ingenious writer, but poſſeſſed of little learning, other than what he acquired in his later years, and which it is ſuſpected was not drawn from the pureſt ſources; the other a man of great erudition, but little judgment, the weakneſs whereof he manifeſted in a childiſh credulity, and a diſpoſition to believe things incredible. Theſe men, upon little better evidence than the reports of travellers, and the relations of miſſionaries, who might have purpoſes of their own to ſerve, have celebrated the policy, the morality, and the learning of the Chineſe, and done little leſs than propoſed them as examples of all that is excellent in human nature *.

* As an inſtance of their ſuperior ſkill in the ſcience of medicine, he ſays that their phyſicians pretend that they are able, not only to tell by the pulſe how many hours or days a ſick man can laſt, but how many years a man in perfect ſeeming health

The topics inſiſted on by Sir William Temple, in that part of his Eſſay on Heroic Virtue, where he takes occaſion to ſpeak of the Chineſe, are their wiſdom, their knowledge, their wit, their learning, ingenuity, and civility, on which he beſtows the moſt extravagant encomiums.

Voſſius is more particular, and ſays that 'the Chineſe deplore 'the loſs of their muſic, the ſuperior merit whereof may be in-'ferred from the relics of it yet remaining, which are ſo excel-'lent, that for their perfection in the art, the Chineſe may impoſe 'ſilence on all Europe.' Farther he ſays of their pantomimes, or theatrical repreſentations by mute perſons, in which the ſentiments are expreſſed by geſticulations, and even nods, that 'theſe declare their

health may live, in caſe of no accident or violence. Eſſay of Heroic Virtue, ſect. II.

The following ſummary of Chineſe knowledge may ſerve to ſhew how well they are entitled to the exaggerated encomiums of ſuch writers. They carry their hiſtory back to many ages before the time of the creation. Hearne's Duct. Hiſtoric. vol. I. page 16. Their notion of an eclipſe is, that there is in heaven a dragon of an immenſe bigneſs, ready at all times to eat up the ſun or moon, which he likes beſt; when an eclipſe of either happens, they ſuppoſe he has got the planet between his teeth, and, to make him quit his hold, they beat drums and braſs kettles. Le Comte's Memoirs of China, edit. 1738, pag. 70, 488. In the judgment of Caſſini, and other great aſtronomers, they err in their accounts of ſundry conjunctions of the planets; in ſome of them not leſs than five hundred years. Jenkin on the Reaſonableneſs and Certainty of the Chriſtian Religion, vol. I. p. 339. They are ſo little ſkilled in mechanics, that they took a watch, brought into their country by a Jeſuit, for an animal. They are ſtrangers to the uſe of letters as the elements of words; and have even at this day no alphabet. Ibid. Moreover they pretend to be the inventors of muſic, notwithſtanding that in the opinion of Father Le Comte they have nothing among them that deſerves the name. See his Memoirs, page 214.

Of their propenſity to fraud and deceit in their dealings, there are abundant examples in Le Comte and Lord Anſon's voyage; and of their morality and civil policy, which are ſo highly extolled, any one may judge, when he is told that in Pekin and other large cities there is an officer, whoſe duty it is every morning to deſtroy the numerous infants that have been expoſed in the ſtreets in the preceding night. Mod. Univ. Hiſt. fol. vol. I. page 175.

'ſkill

'ſkill in the rythmus, which is the ſoul of muſic *.' Elſewhere he takes occaſion to celebrate this people for their ſkill on the tibia, and beſtows on their performance the following enthuſiaſtic encomium: 'The tibia, by far to be preferred to the ſtringed inſtruments of every 'kind, is now ſilenced, ſo that, excepting the Chineſe, who alone 'excel on it, ſcarce any are to be found that are able to pleaſe even 'an ordinary hearer †.'

Another writer is more particular, and gives us for hiſtory this nonſenſe; that Fou-Hi, the firſt of the emperors and legiſlators of China, delivered the precepts of muſic, and having invented fiſhing, compoſed a ſong for thoſe who exerciſed the art; and to baniſh all impurity from the heart, made a lyre with ſtrings of ſilk; and farther that Chin-Nong, a ſucceeding emperor, celebrated the fertility of the earth in ſongs of his own compoſing, and made a beautiful lyre and a guitar enriched with precious ſtones, which produced a noble harmony, curbed the paſſions, and elevated many to virtue and heavenly truth ‡.

Theſe are the opinions of men who have acquired no ſmall reputation in the world of letters; and therefore that error might not derive a ſanction from authority, it ſeemed neceſſary to enquire into the evidence in ſupport of them; of what ſort it is, the paſſages above cited may ſerve to ſhew. It remains now to make the compariſon above propoſed of the modern with the ancient muſic.

The method hitherto purſued by thoſe writers who have attempted to draw a parallel between the ancient and modern muſic, has been to bring together into one point of view the teſtimonies in favour of the former, and to ſtrengthen them by their own ſuffrages, which upon examination will be found to amount to juſt nothing; for theſe teſtimonies being no more than verbal declarations or deſcriptions, every

* De poemat. cant. et virib. Rythmi, pag. 95.

† Ibid. pag. 107.

‡ Extraits des Hiſt. Chinois, publiſhed by Monſ. Goguet, pag. 567, 572. Diſſert. on the Union, &c. of Poetry and Muſic, page 167.

reader

reader is at liberty to ſupply them by ideas of his own; ideas which can only have been excited by that muſic which he has actually heard, or at leaſt peruſed and contemplated. An inſtance borrowed from the practice of ſome critics in painting, may poſſibly illuſtrate this ſentiment: The works of Apelles, Parrhaſius, Zeuxis, and Protogenes, together with thoſe of other artiſts leſs known, ſuch as Bularchus, Euphranor, Timanthes, Polygnotus, Polycletes, and Ariſtides, all famous painters, have been celebrated in terms of high applauſe by Ariſtole, Philoſtratus, Pliny, and the poets; and thoſe who attend to their deſcriptions of them, aſſociate to each ſubject ideas of excellence as perfect as their imaginations can ſuggeſt, which can only be derived from ſuch works of later artiſts as they have ſeen; in like manner as we aſſiſt the deſcriptions of Helen in Homer and of Eve in Milton, with ideas of female beauty, grace, and elegance, drawn from our own obſervation *: The reſult of ſuch a compariſon in the caſe of painting, has frequently been a determination to the prejudice of modern artiſts; and the works of Raphael, Domenichino, and Guido have been condemned as not anſwering to thoſe characters of ſublime and beautiful, which are given to the productions of the ancient ar-

* Mr. Harris to this purpoſe has given his ſentiments in the following judicious obſervation: 'When we read in Milton of Eve, that

'Grace was in all her ſteps, heav'n in her eye,
'In ev'ry geſture dignity and love;

'we have an image not of that Eve which Milton conceived, but of ſuch an Eve 'only as every one by his own proper genius is able to repreſent from reflecting on 'thoſe ideas which he has annexed to thoſe ſeveral ſounds. The greater part in the 'mean time have never perhaps beſtowed one accurate thought upon what Grace, 'Heaven, Love, and Dignity mean; or ever enriched the mind with ideas of 'beauty, or aſked whence they are to be acquired, and by what proportions they are 'conſtituted. On the contrary, when we view Eve as painted by an able painter, 'we labour under no ſuch difficulty; becauſe we have exhibited before us the bet-'ter conceptions of an artiſt, the genuine ideas of perhaps a Titian or a Raphael.' Diſc. on Muſic, Painting, and Poetry, page 77, in not.

tiſts.

tiſts *. In like manner to ſpeak of muſic, we can form ideas of the perfection of harmony and melody, and of the general effect reſulting from the artful combination of muſical ſounds, from that muſic alone which we have actually heard; and when we read of the muſic of Timotheus or Antigenides, we muſt either reſemble it to that of the moſt excellent of the modern artiſts, or forbear to judge about it; and if in the compariſon ſuch critics as Iſaac Voſſius, Sir William Temple, and ſome others, reject the muſic of the moderns as unworthy of attention or notice, how egregiouſly are they deceived, and what do they but forego the ſubſtance for the ſhadow?

Other writers have taken a different courſe, and endeavoured to prove the inferiority of the modern muſic to the ancient, by a compariſon of the powers of each in depriving men of the exerciſe of their rational faculties, and by impelling them to acts of violence. To theſe it may be ſaid, that, admitting ſuch a power in muſic, it ſeems to be common in ſome degree to that of all ages and countries, even the moſt ſavage; but the fact is, that theſe effects are adventitious, and in all the inſtances produced will be found to have followed from ſome prediſpoſition of the mind of the hearer, or peculiar coincidence of circumſtances, for that in truth muſic pretends not to the power of working miracles, nor is it the more to be eſteemed for exciting men to frenzy: Thoſe who contemplate it in a philoſophical and rational manner, and attend to its genuine operation on the human affections, are abundantly ſatisfied of its efficacy, when they diſcover that it has a tendency to exhilarate the mind, to calm the paſſions, to aſſuage the pangs of affliction †, to aſſiſt devotion, and to inſpire the mind with the moſt noble and exalted ſentiments.

* Vide Inquiry into the Beauties of Painting, by Daniel Webb, Eſq. paſſim.

† To this purpoſe we meet in Procopius with the following affecting relation, viz. that Gelimer, king of the Vandals, being at war with the emperor Juſtinian, and having been driven to the mountains by Beliſarius, his general, and reduced to great ſtraits, was adviſed in a letter by a friend of his named Pharas to make terms with the enemy; but in the greatneſs of his ſpirit diſdaining ſubmiſſion, he return-

ed

Others, deſpairing of the evidence of facts, have recourſe to argument, contending that the ſame ſuperiority with reſpect to muſic is to be yielded to the ancients as we allow them in the arts that afford delight to the imagination; poetry, eloquence, and ſculpture, for inſtance, of which ſay they, their works bear luculent teſtimony. To this it may be anſwered, that the evidence of works or productions now exiſting is irrefragable, but in a queſtion of this kind there is no reaſoning by analogy; and farther, that in the caſe of muſic, proof of the ſuperiority of the ancients is not only wanting, but the weight of the argument lies on the other ſide; for where are thoſe productions of the ancients that muſt decide the queſtion? Loſt, it will be ſaid, in the general wreck of literature and the arts: If ſo, they ceaſe to be evidence. Appeal we then to thoſe remaining monuments that exhibit to us the forms of their inſtruments, of which the lyre and the tibia

ed this anſwer: 'Quod mihi conſilium dediſti, magnam habeo tibi gratiam, ut 'etiam hoſti injuſto ſerviam; id verò mihi intolerandum videtur. Si Deus faveret, 'repetere pœnas ab eo vellem, qui à me nunquam nec facto violatus nec verbo, 'bello, cujus nulla eſt cauſa legitima, prætextum præbuit, meque in hunc ſtatum 'redegit, accito, neſcio unde, immiſſoque Beliſario. Non improbabile eſſe ſciat, paſ-'ſurum ipſum, tanquam hominem ac principem, eorum aliquid, unde abhorrit. 'Nequit ultra progredi ſtylus, auferente mentem calamitate, quæ me circumvenit. 'Vale, amice Phara, et mihi quod te oro, citharam, panem unum ac ſpongiam 'mitte.' Procopius Cæſarienſis de Bello Vandalico, vol. I. lib. II. cap. vi. pag. 240, edit. Paris, 1662: which we thus render: I eſteem it a great kindneſs that you vouchſafe me your advice, recommending a ſubmiſſion to my enemy, unjuſt as he has been to me, but the thought thereof is intolerable. If it pleaſes God I am prepared to ſuffer the worſt from him, who having never been injured by me, has found a pretext for a war, for which no juſtifiable reaſon can be aſſigned; and has let looſe upon me Beliſarius, who has reduced me to this extremity. Let him know that he is a man, and, though a prince, that he is not beyond the reach of misfortune. I can proceed no farther, the calamities which ſurround me depriving me of my reaſon. Farewell my friend Pharas, and ſend to me an harp, a loaf of bread, and a ſpunge. The hiſtorian adds, that the harp was to conſole him in his affliction, the loaf to ſatisfy his hunger, he not having ſeen bread for a long time, and the ſpunge to dry up his tears.

are

are the moſt celebrated; and that theſe are greatly excelled by the inſtruments of the moderns will not bear a queſtion. As to the lyre, conſidered as a muſical inſtrument, it is a very artleſs invention, conſiſting merely of a few chords of equal length but unequal tenſions, in ſuch a ſituation, and ſo diſpoſed, as, without any contrivance to prolong or reverberate the ſound, to vibrate in the empty air. The tibia, allowing it the perfection to which the flute of the moderns is arrived, could at beſt be but an imperfect inſtrument *; and yet we are told it was in ſuch eſtimation among the ancients, that at Corinth the ſum of three, ſome ſay ſeven, talents was given by Iſmenias, a muſician, for a flute.

But a weightier argument in favour of modern muſic, at leaſt ſo far as regards the improvements in theory and practice that neceſſarily reſult from the inveſtigation of new principles and the diſcovery of new combinations, may be drawn from the natural courſe and order of things, which is ever towards perfection, as is ſeen in other ſciences, phyſics and mathematics, for inſtance; ſo that of muſic it may be ſaid, that the diſcoveries of one age have ſerved but as a foundation for improvements in the next; the conſequence whereof is, that the fund of harmony is ever encreaſing. What advantages muſt accrue to muſic from this circumſtance, may be diſcerned if we enquire a little into thoſe powers which are chiefly exerciſed in practical compoſition: The art of invention is made one of the heads among the precepts of rhetoric, to which muſic in this and ſundry inſtances bears a near reſemblance; the end of perſuaſion, or affecting the paſſions, being common to both. This faculty conſiſts in the enumeration of common places, which are revolved over in the mind, and requires

* The imperfection of the flute conſiſts in the impoſſibility of attempering its tones, there being no rule or canon by which it can be tuned; to which we may add, that the tones in the upper octave are as diſſimilar, in reſpect of ſound, as thoſe of the human voice in thoſe perſons who have what is called the falſetto. In the flute abec the difference is diſcernible in the double ſhake, which is made on a note that divides the two ſyſtems of the natural and artificial tones.

both an ample ſtore of knowledge in the ſubject upon which it is exerciſed, and a power of applying that knowledge as occaſion may require. It differs from memory in this reſpect, that whereas memory does but recall to the mind the images or remembrance of things as they were firſt perceived, the faculty of invention divides complex ideas into thoſe whereof they are compoſed, and recompounds them again after different faſhions, thereby creating variety of new objects and conceptions: Now the greater the fund of knowledge above ſpoken of is, the greater is the ſource from whence the invention of the artiſt or compoſer is ſupplied; and the benefits thereof are ſeen in new combinations and phraſes capable of variety and permutation without end. And thus much muſt ſerve at preſent touching the comparative merits of the ancient and modern muſic.

In tracing the progreſs of muſic, it will be obſerved, that it naturally divides itſelf into the two branches of ſpeculation and practice, and that each of theſe requires a diſtinct and ſeparate conſideration *. Of the dignity and importance of the former Ptolemy, lib. I. cap. ii. has delivered his ſentiments to the following purpoſe: 'It is in all things the 'buſineſs of contemplation and ſcience to ſhew that the works of nature, 'well regulated as they are, were conſtituted according to reaſon, and to 'anſwer ſome end; and that nothing has been done by her without 'conſideration, or as it were by chance; more eſpecially in thoſe that 'are deemed the fineſt of her works, as participating of reaſon in the 'greateſt degree, the ſenſes of ſight and hearing.' And Sir Iſaac New-

* There are but few inſtances of muſicians that have been eminently diſtinguiſhed for ſkill both in the theory and practice of muſic, Zarlino, Tartini, and Rameau excepted: The two branches of the ſcience have certainly no connection with each other, as may be gathered from the following ſentiment of an ingenious writer on the ſubject: 'The delights of practical muſic enter the ear without acquainting the 'underſtanding from what proportions they ariſe, or even ſo much as that proportion 'is the cauſe of them: This the philoſopher obſerves from reaſon and experience, 'and the mechanic muſt be taught, for the framing inſtruments; but the practiſer 'has no neceſſity to ſtudy, except he deſires the learning as well as the pleaſure of 'his art.' Propoſal to perform Muſic in perfect and mathematical Proportions, by Tho. Salmon, 4to. Lond. 1688.

ton,

ton, ſpeaking of the examination of thoſe ratios that afford pleaſure to the eye in architectural deſigns, ſays it tends to exemplify the ſimplicity in all the works of the Creator. And farther he gives it as his opinion, 'that ſome general laws of the Creator prevail with reſpect to the agreeable or unpleaſing affections of all our ſenſes *.' By practical muſic we are to underſtand the art of compoſition as founded in the laws of harmony, and deriving its grace, elegance, and power of affecting the paſſions from the genius and invention of the artiſt or compoſer; in the exerciſe of which faculty it may be obſerved, that the precepts for combining and aſſociating ſounds are as it were the ſyntax of his art, and are drawn out of it, as the rules of grammar are from ſpeech †.

In muſical hiſtory the ſeveral events moſt worthy of attention ſeem to be thoſe of the firſt eſtabliſhment of a ſyſtem, the introduction of muſic into the church ſervice, the riſe of dramatic muſic; under theſe ſeveral heads all that intelligence which to us is the moſt intereſting may be comprehended. As touching the firſt, it is certain that we owe it to the Greeks, and there is nothing that at this diſtance of time can be ſuperadded to the relations of the ancient writers on the ſubject; nor can it be ſafe to deviate, either in reſpect of form or manner, from the accounts from them tranſmitted to us of the original conſtitution of the lyre, or of the invention and ſucceſſive progreſs of a muſical ſcale; much leſs can we be warranted in ſpeaking of the ancient practice, and the more abſtruſe parts of the ſcience, namely the genera and the modes, in any other terms than themſelves make uſe of: Were a liberty to do otherwiſe allowed, the ſame miſchief would follow that attends the multiplication of the copies of a manuſcript, or a tranſlation through the medium of divers languages, where a new ſenſe may be impoſed upon the text by

* Vide infra, vol. III. page 142, 143, in not.

† 'The art by which language ſhould be regulated, viz. Grammar, is of much 'later invention than languages themſelves, being adapted to what was already in 'being, rather than the rule of making it ſo.' Biſhop Wilkins's Eſſay towards a real Character, pag. 19.

different tranſcribers and tranſlators in ſucceſſion, till the meaning of the original becomes totally obſcured.

Vitruvius, in his treatiſe De Architectura, has a chapter on muſic, wherein he laments the want of words in the Roman language equivalent to the Greek muſical terms; the ſame difficulty is experienced in a greater or leſs degree by all who take occaſion to ſpeak of the ancient muſic, whether of the Hebrews or the Greeks. The Engliſh tranſlators of the Bible were neceſſitated to render the words כנור Kinnor and צוגב Gnugab, by harp and organ; and a tranſlator of muſical appellatives will in many inſtances be reduced to as great difficulty as the Laplander, who in rendering a paſſage in the Canticles, 'He looketh forth at the windows, ſhewing himſelf through 'the lattice,' could find no nearer a reſemblance to a lattice than a ſnow-ſhoe, a thing like a racket uſed in the game of tennis, and tranſlated it accordingly.

The complaint of Vitruvius above mentioned furniſhes an occaſion of enquiry into the ſtate of muſic among the Romans; and this will appear, even in their moſt flouriſhing condition, to have been, both in theory and practice, very low, there being no author to be found till after the deſtruction of the commonwealth who has written on the ſubject; and of thoſe that lived in the time of Auguſtus and afterwards, the number is ſo ſmall, and, if we except Boetius, their writings are ſo inconſiderable, as ſcarce to deſerve notice. Vitruvius wrote not profeſſedly on muſic; all that he ſays of it is contained in the third, fourth, and fifth chapters of the third book of his treatiſe De Architectura; wherein laying down the rules for the conſtruction of theatres, he ſpeaks of harmony in general terms, and afterwards of certain hollow veſſels diſpoſed in niches for the purpoſe of reverberating the voice of the ſingers or actors; and thence takes occaſion to mention the genera of the ancients, which he illuſtrates by a ſcale or diagram, compoſed, as he ſays, by Ariſtoxenus himſelf, though it does not occur in the valuable edition of that author publiſhed by Meibomius. In the ſame work,

work, lib. X. cap. ii. entitled De Hydraulicis, he deſcribes the hydraulic organ of the ancients, but in ſuch terms, that no one has been able ſatisfactorily to aſcertain either its figure or the uſe of its parts.

Of Cenſorinus, Macrobius, Martianus Capella, and Caſſiodorus, it was never pretended that they had made any new diſcoveries, or contributed in the leaſt to the improvement of muſic. Boetius indeed with great induſtry and judgment, collected the ſenſe of the ancient Greek writers on Harmonics, and from the ſeveral works of Ariſtoxenus, Euclid, Nicomachus, Alypius, Ptolemy, and others whoſe diſcourſes are now loſt, compiled his moſt excellent treatiſe De Muſica. In this he delivers the doctrines of the authors above mentioned, illuſtrated by numerical calculations and diagrams of his own invention; therein manifeſting a thorough knowledge of the ſubject. Hence, and becauſe of his great accuracy and preciſion, this work of Boetius, notwithſtanding it contains little that can be ſaid to be new, has ever been looked upon as a valuable repoſitory of muſical erudition *.

Long before the time of Boetius, the enarmonic and chromatic genera had grown into diſuſe; the diatonic genus only remaining, the muſical characters were greatly reduced in number; and the notation of muſic became ſo ſimple, that the Romans were able to repreſent the whole ſeries of ſounds contained in the ſyſtem of a double octave, or the biſdiapaſon, by fifteen characters; rejecting therefore the characters uſed by the Greeks for the purpoſe, they aſſumed the firſt fifteen letters of their own alphabet; and this is the only improvement or innovation in muſic that we know of that can be aſcribed to the Romans.

As to the practice of muſic, it ſeems to have been carried to no very great degree of perfection by the Romans; the tibia and the lyre ſeem

* The works of Boetius were publiſhed in a folio volume at Venice in the year 1499, and at Baſil by Glareanus, in 1570. In the treatiſe De Muſica are ſundry diagrams invented by the editor, which tend greatly to the illuſtration of his author.

to have been the only inſtruments in uſe among them; and on theſe there were no performers of ſuch diſtinguiſhed merit as to render them worthy the notice of poſterity, which perhaps is the reaſon that the names of but few of them are recorded.

Caſpar Bartholinus has written a treatiſe 'De Tibiis veterum et 'earum antiquo uſu,' in which he has brought together a great variety of intelligence reſpecting the flutes of the ancients: In this tract is a chapter entitled 'Tibia in Ludis Spectaculis atque Comediis,' wherein the author takes occaſion to ſpeak of the tibiæ pares et impares, and alſo of the tibiæ dextræ et ſiniſtræ, uſed in the repreſentation of the comedies of Terence, which he illuſtrates by plates repreſenting the forms of them ſeverally, as alſo the manner of inflating them, taken from coins and other authentic memorials. In particular he gives an engraving from a manuſcript in the Vatican library, of a ſcene in an ancient comedy, in which a tibiciniſt is delineated ſtanding on the ſtage, and blowing on two equal flutes: What relation his muſic has to the action we are to ſeek. He alſo gives from a marble at Rome the figure of a man with an inflected horn near him, thus inſcribed,

M. IULIUS VICTOR EX COLLEGIO LITICINUM CORNICINUM.

It appears from a paſſage in Valerius Maximus, that there was at Rome a college of tibiciniſts or players on the flute, who we may ſuppoſe were favoured with ſome ſpecial privileges and immunities. Theſe ſeem to have been a diſtinct order of muſicians from the former, at leaſt there are ſundry inſcriptions in Gruter purporting that there was at Rome a college comprehending both tibiciniſts and fidiciniſts; which latter ſeem to have been no other than lyriſts, a kind of muſicians of leſs account among the Romans than the players on their favourite inſtrument the flute. Valerius Maximus, lib. II. cap. v. relates of the tibiciniſts that they were wont to play on their inſtruments in the forum, with their heads covered, and in party-coloured garments.

That the tibiciniſts were greatly indulged by the Romans, may be inferred from the nature of their office, which required their attendance

dance at triumphs, at ſacrifices, and indeed all public ſolemnities; at leaſt the ſenſe of their importance and uſefulneſs to the ſtate is the only reaſon that can be ſuggeſted for their intemperance, and that inſolence for which they were remarkable, and which both Livy and Valerius Maximus have recorded in a narration to the following purpoſe. 'The cenſors had refuſed to permit the tibicines to eat in the 'temple of Jupiter, a privilege which they claimed as founded on an-'cient cuſtom; whereupon the tibicines withdrew to Tibur, a town 'in the neighbourhood of Rome, now Tivoli. As the tibicines were 'neceſſary attendants on the ſacrifices, the magiſtrates were at a loſs 'how to perform thoſe ſolemnities in their abſence; the ſenate there-'fore ſent embaſſadors to the Tiburtines, requeſting them to deliver 'them up as officers of the ſtate who had fled from their duty: At 'firſt perſuaſions were tried, but theſe proving ineffectual, the Tibur-'tines had recourſe to ſtratagem; they appointed a public feaſt, and 'inviting the tibicines to aſſiſt at it, plied them with wine till they be-'came intoxicated, and, while they were aſleep, put them into carts, 'which conveyed them to Rome. The next day, having in ſome de-'gree recovered their reaſon, the tibicines were prevailed on to ſtay in 'the city, and were not only reſtored to the privilege of eating in the 'temple, but were permitted annually to celebrate the day of their 'return, though attended with circumſtances ſo infamous to their 'office, by proceſſions in which the moſt licentious exceſſes were 'allowed *.'

The ſeceſſion of the tibiciniſts was in the conſulate of Caius Junius Bubulcus and Quintus Æmilius Barbula; that is to ſay in the year of the world 3640, three hundred and eight years before Chriſt; and ſerves to ſhew the extreme licentiouſneſs of Roman manners at that period, as alſo the low ſtate of their muſic, when the beſt inſtruments they could find to celebrate the praiſes of their deities were a few

* Livy, lib. IX. cap. xxx. See alſo Valerius Maximus, lib. II. cap. v. The ſame ſtory is related by Ovid, Faſti, lib. VI. who adds that the thirteenth day of June was celebrated as the anniverſary.

ſorry

ſorry pipes, little better than thoſe which now ſerve as playthings for children.

But, leaving the ſibicines and their pipes to their admirers, if we proceed to enquire into the ſtate of muſic among the Romans at any given period of their hiſtory, we ſhall find, that as a ſcience they held it in ſmall eſtimation: And to this fact Cornelius Nepos bears the fulleſt teſtimony, for relating in his life of Epaminondas that he could dance, play on the harp and flute, he adds, that in Greece theſe accompliſhments were greatly eſteemed, but by the Romans they were little regarded. And Cicero, in his Tuſculan Queſtions, lib. I. cap. i. to the ſame purpoſe, obſerves that the ancient Romans, addicting themſelves to the ſtudy of ethics and politics, left muſic and the politer arts to the Greeks. Farther we may venture to aſſert, that neither their religious ſolemnities, nor their triumphs, their ſhews or theatrical repreſentations, ſplendid as they were, contributed in the leaſt to the improvement of muſic either in theory or practice: To ſay the truth, they ſeemed ſcarcely to have conſidered it as a ſubject of ſpeculation; and it was not until it received a ſanction from the primitive fathers of the church, that the ſcience began to recover its ancient dignity.

The introduction of muſic into the ſervice of the church affords ample ſcope for reflection, and comprehends in its hiſtory a great part of what we know of modern muſic. All that need be mentioned in this place reſpecting that important event is, that after the example of the Jews, and upon the authority of ſundry paſſages in ſcripture, and more eſpecially in compliance with the exhortation of St. Paul in his Epiſtles, St. Baſil, St. Ambroſe and St. Chryſoſtom about the middle of the fourth century inſtituted antiphonal ſinging in their reſpective churches of Ceſarea in Cappadocia, Milan, and Conſtantinople. St. Ambroſe, who muſt be ſuppoſed to have been eminently ſkilled in the ſcience, preſcribed a formula of ſinging in a ſeries of melodies called the eccleſiaſtical tones, apparently borrowed from the modes of the ancient Greeks; theſe, as conſtituted by him, were in number

number only four, and are meant when we ſpeak of the Cantus Ambroſianus; but St. Gregory, near two centuries after, increaſed them to eight. The ſame father drew up a number of precepts reſpecting the limits of the melodies, the fundamental note, and the ſucceſſion of tones and ſemitones in each; and, with a view to the eſtabliſhment of a ſettled and uniform muſical ſcience, that would apply to all the ſeveral offices at that time uſed in divine worſhip, founded and endowed a ſchool for the inſtruction of youth in the rudiments of muſic, as contained in this formula, which was diſtinguiſhed by the appellation of the Cantus Eccleſiaſticus, and in later times by that of the Cantus Gregorianus.

Before this time muſic had ceaſed to be a ſubject of ſpeculation: Ptolemy was the laſt of the philoſophers that had written profeſſedly on it; and though it may be ſaid that his three books of Harmonics, as alſo thoſe of Ariſtoxenus, Euclid, Nicomachus, Ariſtides Quintilianus, and others, being extant, muſic was in a way of improvement from the ſtudies of men no leſs diſpoſed to think and reflect than themſelves; yet the fact is, that among the Romans the ſcience not only had made no progreſs at all, but even before the diſſolution of the commonwealth, with them it ſeemed to be extinct. Nor let the ſuppoſition be thought groundleſs, that during ſome of the ſucceeding ages the books, the very repoſitories of what we call muſical ſcience, might be loſt; the hiſtory of the lower empire furniſhing an inſtance, the more remarkable, as it relates to their own, the Roman civil law, which proves at leaſt the poſſibility of ſuch a misfortune *.

To theſe cauſes, and the zeal of the fathers abovementioned, and more eſpecially of St. Gregory, to diſſeminate its precepts, it is to be aſcribed that the cultivation of muſic became the peculiar care of the clergy. But here a diſtinction is to be noted between the ſtudy and the practice of the ſcience; for we find that at the time of the inſtitution of the Cantus Ambroſianus, an order of clergy was alſo eſtabliſhed, whoſe employment it was to perform ſuch parts of the ſervice as were

* See the relation of the diſcovery of the Litera Piſana in vol. II. page 28.

required to be ſung: Theſe were called Pſalmiſtæ; and though by Bellarmine and a few other writers they are confounded with the Lectors, yet were they by the canoniſts accounted a ſeparate and diſtinct order. The reaſon for their inſtitution was, that whereas in the apoſtolical age the whole congregation ſang in divine ſervice, and great confuſion and diſorder followed therefrom, it was found neceſſary to ſettle what the church calls a regular and decent ſong, which, as it was framed by rule, and founded in the principles of harmony, required ſkill in the performance; and accordingly we find a canon of the council of Laodicea held as early as the beginning of the fourth century, forbidding all excepting the canonical ſingers, that is to ſay, thoſe who were ſtationed in the Ambo, where the ſinging-deſk was placed, and who ſang out of a book or parchment, to join in the pſalms, hymns, and other parts of muſical divine ſervice. We may well ſuppoſe that this order of men were endowed with all the requiſites for the diſcharge of their function; and that that peculiar form which the council of Carthage directs to be uſed for the ordination of Pſalmiſtæ or ſingers *, was in effect a recognition of their ſkill and abilities.

The order of men abovementioned can be conſidered in no other view than as mere practical muſicians, the principal object of whoſe attention was to make themſelves acquainted with the ſongs of the church, and to utter them with that decency and gravity, and in ſuch a manner as tended moſt to edification: From the frequent repetition of the ſame offices it muſt be ſuppoſed that in general they ſang by rote; at leaſt we have no better reaſon to aſſign than that they muſt have ſo done, for the eſtabliſhment of a ſchool by St. Gregory for the inſtruction of youth in the Cantus Eccleſiaſticus, as reformed by himſelf, and for that ſedulous attention to their improvement in it which he manifeſted in ſundry inſtances.

At the ſame time that we applaud the zeal of this father of the church, we cannot but wonder at that of his predeceſſors, which is not more apparent in their commendations of muſic, as aſſociated with

* See it in vol. I. page 284, n.

reli-

religious worſhip, than in their ſevere cenſures of that which was calculated for private recreation: As to the ſongs of the ſtage in the ages immediately ſucceeding the Chriſtian era, we know little more of them than in general that they were ſuited to the corrupt manners of the times; and theſe, by reaſon of their lewdneſs, and perhaps impiety of ſentiment, might be a juſt ſubject of reprehenſion; but againſt the muſic, the ſounds to which they were uttered, or the particular inſtruments that aſſiſted the voice in ſinging them, an objection can ſcarce be thought of; and yet ſo frequent and ſo bitter are the invectives of the primitive fathers, namely, Clemens Alexandrinus, Tertullian, St. Cyprian, Lactantius, Epiphanius, Gregory Nazianzen, and of St. Baſil, St. Auguſtine, and St. Chryſoſtom, who were lovers and promoters of the practice of muſic, againſt wicked meaſures and effeminate melodies, the noiſe of flutes, cymbals, harps, and other inſtruments of deceit, ſeducing the hearers to intemperance, and even idolatry, that if credit be given to their opinions of the nature and tendency of ſecular muſic, we muſt be inclined to believe, as they in good earneſt profeſs to have done, that it was an invention of the Devil.

The cultivation of muſic as a ſcience was the employment of a ſet of men, in whom all the learning of the times may then be ſaid to have centered; theſe were the regular clergy, of ſuch of whom as flouriſhed in the eleventh century and afterwards, it muſt in juſtice be ſaid, that what they wanted in knowledge, they made up in induſtry; and that thoſe frequent barbariſms which occur in their writings, were in no ſmall degree atoned for by the clearneſs and preciſion * with which on every occaſion they delivered their ſentiments. Nor

* Theſe qualities ſeem to be but the neceſſary reſult of the old ſcholaſtic method of inſtitution, in which logic made a conſiderable part, and are in no inſtance more manifeſt than in the ancient forms of judicial proceedings, ſuch as writs and pleadings; of which Sir Matthew Hale, in his Hiſtory of the Law, chap. 7, remarks that they were very ſhort, but very clear and conſpicuous, orderly digeſted, pithy, clear, and rational. The ſame may be ſaid in general of the more ancient ſtatutes.

was the conciſeneſs and method of the monkiſh treatiſes on muſic a leſs recommendation of them than their perſpicuity: They conſiſted either of ſuch maxims as were deemed of greateſt importance in the ſtudy of the ſcience, or of familiar colloquies between a maſter and his diſciple, in which in an orderly courſe of gradation, firſt the elements, and then the precepts of the art were delivered and illuſtrated. To enumerate the inſtances of this kind which have occurred in the courſe of this work, would be an endleſs taſk; let it ſuffice to ſay that the Hiſtoire Litteraire de France, and the Memoirs of Bale, Pits, and the Bibliotheca of Tanner abound with references to a variety of manuſcript tracts depoſited in the public and other libraries, that abundantly prove the mode of muſical inſtruction to have been ſuch as is above deſcribed.

Before the period above ſpoken of, muſic had for very good reaſons been admitted into the number of the liberal ſciences; and accordingly in the ſcholaſtic diviſion of the arts into the trivium and quadrivium, it held a place in the latter: Nevertheleſs, till the Greek literature began to revive in Europe, ſaving the ſummary of harmonics contained in the treatiſe De Muſica of Boetius, the ſtudents in that faculty had ſcarce any ſource of intelligence; and to this it muſt be attributed that in none of the many tracts written by the monks of thoſe times, and afterwards by the profeſſors or ſcholaſtics as they were called, do we meet with any of thoſe profound diſquiſitions on harmony and the proportions which reſolve the principles of muſic into geometry; nor any of thoſe nice calculations and compariſons of ratios, or ſubtile diſtinctions between the conſonances of one kind and thoſe of another, which abound in the writings of the ancient Greeks; ſo that were we to judge from the many diſcourſes written during that dark period, and bearing the titles of Micrologus, Metrologus, and others of the like import, we ſhould conclude that the ſcience of harmonics had ſcarce any exiſtence among mankind. Nor could any great advantages reſult from the writings of Boetius, ſeeing that there wanted light to read them by; and this was not obtained till Franchinus introduced

troduced it, by procuring tranſlations of thoſe authors from whoſe writings Boetius had compiled his work.

That the ſtudies of the monkiſh muſicians muſt have been confined to the Cantus Gregorianus is evident from this conſideration, that they were ſtrangers to muſic of every other kind; an aſſertion which will be the more readily credited when we are told that till the middle of the eleventh century rythmic or menſurable muſic was not known: Their method of teaching it was by the monochord, without which they had no method of determining the progreſſion of tones and ſemitones in the octave, nor conſequently of meaſuring by the voice any of the intervals contained in it.

The reformation of the ſcale by Guido Aretinus, and more eſpecially his invention of a method of ſinging by certain ſyllables adapted to the notes, facilitated the practice of ſinging to ſuch a degree, that, as himſelf relates, the boys of his monaſtery were rendered capable in a month's time of ſinging in a regular and orderly ſucceſſion the ſeveral intervals with the utmoſt accuracy and preciſion*. We are told, though not by himſelf, that he alſo by an ingenious contrivance transferred the notes of his ſcale to the left hand, making a ſeveral joint of each of the fingers the poſition of a note. Whether this invention is to be aſcribed to him or not, it is pretty certain that it followed ſoon after the reformation of the ſcale; and that it gave riſe to a diſtinction of muſic into manual and tonal, the firſt comprehending the precepts of ſinging by the ſyllables, the other the Cantus Eccleſiaſticus, as inſtituted in the formula of St. Gregory.

At this time the world were ſtrangers to what we call rythmic muſic, the practice of ſinging, and thereby of aſſociating muſic with poetry, which till then had univerſally prevailed, rendering any ſuch invention unneceſſary: Nevertheleſs there were ſome writers who had entertained an idea of tranſferring the proſody of poetry to muſic; and a few ſcattered hints of this kind, which occur in the writings of St. Auguſtine and our countryman Bede on the ſubject of metre, ſug-

* Vide infra, vol. I. pag. 448.

geſted

geſted the formation of a ſyſtem of metrical laws, ſuch as would not only enable muſic to ſubſiſt of itſelf, but aid the powers of melody with that force and energy which it is obſerved to derive from the regular commixture and interchange of long and ſhort quantities.

This improvement was effected in the inſtitution of what is called the Cantus Menſurabilis; a branch of muſical ſcience which ſubjected the duration of muſical ſounds to rule and meaſure, by aſſigning to thoſe of the ſloweſt progreſſion certain given portions of time, and to the next in ſucceſſion a leſs, in a regular gradation; and which taught a method of ſignifying by characters, varying in form and colour, the radical notes, with their ſeveral ramifications, terminating in thoſe of the ſmalleſt value, i. e. of the ſhorteſt duration.

An invention of this kind was all that could then be thought wanting to the perfection of inſtrumental muſic; and from this period we may obſerve that it began to flouriſh: It is true that the ſtate of the mechanic arts was then very low, and that the inſtruments in common uſe were ſo rudely conſtructed, as to be ſcarcely capable of yielding muſical ſounds. Bartholomeus, in his book De Proprietatibus Rerum, in an enumeration of the muſical inſtruments of his time, has deſcribed the flute as made of the boughs of an elder-tree hollowed; and an inſtrument called the Symphonia, as made of a hollow tree, cloſed in leather on either ſide, which he ſays is beaten of minſtrels with ſticks, and that 'by accord of hyghe and lowe thereof comyth full 'ſwete notes:' And again, deſcribing the Pſalterium or Sawtrie, he ſays it differs from the harp, for that it is made of an hollow tree, and that 'the ſowne comythe upwarde, the ſtrynges being ſmytte 'downwarde; whereas in the harpe the holowneſſe of the tre is by-'nethe.' Theſe deſcriptions, and others of the like kind which are elſewhere to be met with, are evidence of the inartificial conſtruction of muſical inſtruments in thoſe days, and leave it a queſtion what kind of a harp or other inſtrument that could be on which king Alfred had attained to ſuch a degree of excellence as to rival the muſicians of his time.

Never-

Nevertheleſs it appears that there were certain inſtruments, perhaps not in common uſe, better calculated to produce melody than thoſe abovementioned, namely, thoſe of the viol kind; the ſpecific difference between which and other ſtringed inſtruments is, that in the former the ſound is produced by the action of a plectrum or bow of hair on the ſtrings: Of theſe the mention is not only expreſs, but frequent in Chaucer, by the names of the Fithel, Getron, Ribible, and other appellations, clearly ſynonymous: The invention of this claſs of inſtruments is by ſome, who make the viol the prototype of it, aſcribed to the French; but there are other writers who derive the viol itſelf from the Arabian Rebab, from whence perhaps Ribible and Rebec, the uſe whereof it is ſaid the Chriſtians learned from the Saracens in the time of the Cruſades; but it is more probable, by reaſon of its antiquity, that it was brought into Spain by the Moors.

To aſcertain the degree of perfection to which the practice of inſtrumental muſic had attained at any period before the ſixteenth century, would be very difficult. The Provençal ſongs, as being mere vocal compoſitions, afford no ground on which a conjecture might be formed; and as to their popular tunes, the airs of the Muſars and Violers, beſides that they ſeem to have been mere melodies, for the moſt part the effuſions of fancy, and not regulated by harmonical precepts, the impreſſion of them can hardly be ſuppoſed to have been either deep or laſting; and this may be the chief reaſon that the knowledge of them has not reached poſterity.

That the practice of inſtrumental muſic was become familiar with ſuch young perſons of both ſexes as had received the benefit of a good education, is clearly intimated by the old poets. Not only the Squire, but the Clerk, Abſolon, in Chaucer, are by him deſcribed, the one as floyting, i. e. fluting all the day, the other as playing ſongs on a ſmall Ribible, and elſewhere on the Geterne *; and in the Confeſſio Aman-

* See the character of the Squire among the Prologues to the Canterbury Tales, as alſo the Miller's Tale paſſim.

tis of Gower, fol. 178, b. is a plain intimation that the Citole, an inſtrument nearly reſembling the virginal, was in his time the recreation of well educated young women*.

We are alſo told by Boccace, in his Account of the Plague at Florence in 1348, that the ladies and gentlemen who retired from that city, and are the relators of the ſeveral ſtories contained in his Decameron, among other recreations in the intervals of their diſcourſes, intermixed muſic; and that ſundry of the perſons whoſe names he mentions played on the lute and the viol. They alſo danced to the muſic of the Cornamuſa or bagpipe, an inſtrument which we may infer to have been held in but ordinary eſtimation from this circumſtance, that it is put into the hands of Tindarus, a domeſtic of one of the ladies; beſides that Chaucer in characterizing his Miller ſays,

'A baggepipe well couth he blowe and ſoune.'

Of vocal concerts, as they ſtood about the year 1550, or perhaps earlier, a judgment may be formed from the madrigals of that time, which abound with all the graces of harmony. Concerts of inſtruments alone ſeem to be of later invention, at leaſt there is no clear evidence of the form in which they exiſted, other than treatiſes and compoſitions for concerts of viols called Fantaſias, few whereof were publiſhed till thirty years after †.

Gio. Maria Artuſi, an eccleſiaſtic of Bologna, and a writer on muſic about the year 1600, deſcribes the concerts of his time as abounding in ſweetneſs of harmony, and conſiſting of cornets, trumpets,

* Vide infra, vol. II, page 106.

† The earlieſt of which we can ſpeak with certainty, is a treatiſe in folio by Thomas à Sancta Maria, a Spaniſh Dominican, publiſhed at Valladolid in 1570, entitled 'Arte de tanner fantaſia para tecla, viguela, y todo inſtrumendo de tres o 'quatro ordenes,' which carries the antiquity of concerts for viols, and thoſe compoſitions called Fantaſias, back to that time, but leaves us at a loſs as to other inſtrumental concerts.

violins,

violins, viols, harps, lutes, flutes, and harpſichords: Theſe, as alſo organs, regals, and guitars, are enumerated in the catalogue of inſtruments prefixed to the opera, L'Orfeo, compoſed by Claudio Monteverde, and repreſented at Mantua in 1607. Tom Coryat ſpeaks alſo of a performance at Venice, chiefly of inſtrumental muſic, which he proteſts he would have travelled an hundred miles on foot to hear, but without any ſuch particular deſcription as can enable us to compare it with the concerts of more modern times.

As touching the theory of the ſcience, it has above been ſaid to have conſiſted in manual, tonal, and menſurable muſic, with this farther remark, that, as it was included in the very nature of their profeſſion, and beſides required ſome degree of literature, the great cultivators of it were the regular clergy. Theſe men contented themſelves with that ſmall portion of knowledge which was to be attained by the peruſal of Boetius, Caſſiodorus, Guido, and a few others, who wrote in the Latin tongue; the little they knew they freely communicated; and it was not till the beginning of the fourteenth century that men began to ſuſpect that the ſcience was capable of farther improvement.

About this time Johannes De Muris improved the Cantus Menſurabilis, by reducing it to form and demonſtrating that the meaſures thereof, like the ratios of the conſonances, were founded in number and proportion: From the rules laid down by him in a treatiſe entitled Practica Menſurabilis Cantûs, are derived the diſtinctions of duple and triple proportion, as they reſpect the duration of ſounds, with all the various modifications thereof. On this tract Proſdocimus Beldimandis wrote a commentary, and farther illuſtrated the doctrines contained therein in ſundry diſcourſes on the ſubjects of plain and menſurable muſic. It appears that both theſe perſons were philoſophers at large, and eminently ſkilled in the mathematics; and the liberal manner in which they wrote on muſic, treating it as a ſubject of deep ſpeculation, was an inducement with many learned men, who lived under no eccleſiaſtical rule, to enter into an inveſtigation of its principles. Some of theſe aſſumed the character of profeſſors of the ſcience, and undertook by

public lectures to diffeminate its principles. The moſt eminent of theſe perſons were Marchettus of Padua, Johannes Tinctor, Guliel-mus Garnerius, and Antonius Suarcialupus, to whom we may add Politian, whoſe ſkill in muſic is manifeſted in a diſcourſe De Muſica, contained in his Panepiſtemon or Prælectiones, extant in print. But notwithſtanding the pains thus taken to revive the ſcience, the im-provement of it went on very ſlowly; whatever advances were made in practice, the theoretical topics of diſquiſition were ſoon exhauſted, and the ſcience of harmonics may be ſaid to have been for ſome ages at a ſtand.

At length the beams of learning began to dawn on the weſtern empire: The city of Conſtantinople had been the ſeat of literature for ſome ages, but the ſack of it by the Turks in the year 1453, had driven a great number of learned Greeks thence, who bringing with them an immenſe treaſure of manuſcripts, took refuge in Italy. Being ſettled there, they opened their ſtores, took poſſeſſion of the public ſchools, and became the profeſſors and teachers of the mathematical and other ſciences, and indeed of philoſophy, eloquence, and literature in gene-ral, in all the great cities. Of the many valuable books of Harmo-nics that are known to have been written by the mathematicians and other ancient Greeks, ſome had eſcaped that fate which learning is ſure to experience from the ravages of conqueſt *, and the contents of theſe being made public, the principles of the ſcience began to be known and underſtood by many, who till then were ſcarcely ſenſible that it had any principles at all.

This communication of intelligence was very propitious to muſic, as it determined many perſons to the ſtudy of the ſcience of harmony. The tonal laws and the Cantus Menſurabilis were left to thoſe whoſe duty it was to underſtand them; the ratios of ſounds, and the nature of conſonance were conſidered as eſſentials in muſic, and the inveſti-

* Laurus Quirinus of Venice was told by Cardinal Ruthen that upwards of one hundred and twenty thouſand volumes were deſtroyed. Hody, De Græcis illuſtr. lib. II. cap. i.

gation

gation of theſe was the chief purſuit of ſuch as were ſenſible of the value of that kind of learning.

Of the many who had profited in this new ſcience, as it may be called, one was Franchinus Gaffurius, a native of Lodi, who having quitted the tuition of a Carmelite monk, who had been his inſtructor, became ſoon diſtinguiſhed for ſkill in thoſe theoretic principles, the knowledge whereof he had derived from an attendance on the Greek teachers. And having procured copies of the treatiſes on harmonics of Ariſtides Quintilianus, Ptolemy, Manuel Bryennius, and Bacchius ſenior, he cauſed them to be tranſlated into Latin; and, beſides diſcharging the duty of a public profeſſor of muſic in the ſeveral cities of Italy, became the revivor of muſical erudition; and that as well poſterity, as thoſe of his own time, might profit by his labours, he digeſted the ſubſtance of his lectures into diſtinct treatiſes, and gave them to the world.

The writings of Franchinus, as they were replete with learning drawn from the genuine ſource of antiquity, and contained the cleareſt demonſtrations of the principles of harmony, were ſo generally ſtudied, that muſic began now to aſſume the character of a ſecular profeſſion. The precepts therein delivered afforded a greater latitude to the inventive faculty than the tonal laws allowed of; and emancipating the ſcience from the bondage thereof, many who had no relation to the church ſet themſelves to frame compoſitions for its ſervice, in which the powers both of harmony and melody were united. And hence we may at leaſt with a ſhew of probability date the origin of an office that yet ſubſiſts in the choral eſtabliſhments of Italy, namely, that of Maeſtro di Cappella; the duty whereof ſeems uniformly to have been not only that the perſon appointed to it ſhould as precentor regulate the choir, but alſo adapt to muſic the offices performed both on ordinary and ſolemn occaſions. Of the dignity and importance of the office of Maeſtro di Cappella a judgment may be formed from this circumſtance, that the perſons elected to it for ſome centuries paſt appear to have been of diſtinguiſhed emi-

nence*; and of its neceſſity and utility no ſtronger argument can be offered, than that among the Germans, to whom the knowledge of muſic was very ſoon communicated after its revival in Italy, the office was recognized by the appointment of a director of the choir in the principal churches of all the provinces and cities. The ſame ſenſe of the importance of this office appears to have been entertained by the proteſtants, who at the time of the Reformation we find to have been no leſs ſedulous in the cultivation of muſic with a view to religious worſhip, than the church that had eſtabliſhed it. It is true that Calvin was for ſome time in doubt whether to adopt the ſolemn choral ſervice, or that plain metrical pſalmody which is recommended by St. Paul to the Coloſſians, as an incentive to ſuch mirth as was conſiſtent with the Chriſtian profeſſion, and at length determined on the latter.

But Luther, who was excellently ſkilled in muſic, conſidered it not merely as a relief under trouble and anxiety, but as the voice of praiſe, and as having a tendency to excite and encourage devout affections, beſides that he had tranſlated into the German language the Te Deum, and compoſed ſundry hymns, as alſo tunes to ſome of the German pſalms†, he, with the approbation of Melancthon, received into his church a ſolemn ſervice, which included anthems, hymns, and certain ſweet motetæ, of which he ſpeaks very feelingly, and of muſic in general he gives his opinion in theſe words: 'Scimus muſicam dæmo-'nibus etiam inviſam et intolerabilem eſſe‡.' That the office of a

* Andrea Adami Bolſena, in the hiſtorical preface to his 'Oſſervazioni per ben 'regolare il Coro de i Cantori della Cappella Pontificia,' aſſerts that anciently in the college of pontifical ſingers the maeſtro di cappella was a biſhop.

† Melchior Adamus, in his life of Luther, has inſerted a letter from him to Spalatinus, written anno 1524, wherein he ſays he is looking out for poets to tranſlate the whole of the Pſalms into the German tongue, and requeſts of Spalatinus his aſſiſtance therein. This was ſome years before Marot tranſlated the Pſalms into French.

‡ In an epiſtle to Senfelius, Muſicus, cited by Dr. Wetenhall from Sethus Calviſius, in his Gifts and Offices in the public Worſhip of God, page 434, but without reference to any work of Calviſius. This epiſtle, wherever it is, and the above-cited paſſage is alſo noticed by Butler in his Principles of Muſic, page 115. Dr. Weten-

chapel-maſter was recognized by the proteſtants in the manner abovementioned is hardly to be doubted, ſeeing that it was exerciſed at Bavaria by Ludovicus Senfelius, a diſciple of Henry Iſaac, and an intimate friend and correſpondent of Luther *, and ſubſiſts in Germany to this day.

For the reaſons above aſſigned, we may without ſcruple attribute to Franchinus a ſhare of that merit which is aſcribed to the revivors of literature in the fifteenth century; and the rather as his writings, and the ſeveral tranſlations of ancient treatiſes on harmonics which he procured to be made, furniſhed the ſtudents in the ſcience with ſuch a copious fund of information, as enabled them not only to reaſon juſtly on its principles, but to extend the narrow bounds of harmony, and lay a foundation for thoſe improvements, which it has been the felicity of later times to experience: And it is not a groundleſs ſuppoſition that the reputation of his writings was a powerful incentive to the publication of thoſe numerous diſcourſes on muſic of which the enſuing work contains a detail. Indeed ſo general was the propenſity in the profeſſors of the ſcience in Italy, and in Germany more eſpecially, to the compilation of muſical inſtitutes, dialogues, and diſcourſes in various forms, that the ſcience was for ſome time rather hurt by the repetition of the ſame precepts, than benefited by any intelligence that could in ſtrictneſs be ſaid to be new. The writings of Zarlino and Salinas are replete with erudition; the ſame, though in a leſs eminent degree, may be ſaid of thoſe of Glareanus and the elder Galilei; but of the generality of the Introductions, the Enchiridions, and the Erotemata publiſhed in Italy and Germany from about the year 1550 to the middle of the next century, the perſpicuity of them is their beſt praiſe.

As the revival of the theory of muſic is to be aſcribed to the Italians, ſo alſo are thoſe improvements in the practice of it that have

* Wetenhall applies this paſſage to the muſic of our church, and on the authority thereof pronounces it to be ſuch as no Devil can ſtand againſt.

* Some motets of his compoſition are extant in the Dodecachordon of Glareanus.

brought

brought it to the ſtate of perfection in which we behold it at this day. It is true that in the practice of particular inſtruments the maſters of other countries have been eminently diſtinguiſhed, as namely, thoſe of Germany for ſkill on the organ; the French for the lute and harpſichord; and we are indebted for many valuable diſcoveries touching the nature and properties of ſound, of conſonance and diſſonance, the method of conſtructing the various kinds of muſical inſtruments, and, above all, for a nice and accurate inveſtigation of the principles of harmonics, to the learning and induſtry of Merſennus, a Frenchman; but in the ſcience of compoſition the muſicians of Italy have uniformly been the inſtructors of all Europe.

To relate the ſubſequent inſtances of improvement in muſic, or to enumerate the many perſons of diſtinguiſhed eminence that have excelled in the theory and practice thereof, would be to anticipate that information, which it is the end of hiſtory to communicate; and to animadvert on the numberleſs defects of the ancient muſic, may ſeem unneceſſary, ſeeing that as well the paucity as the ſtructure of the ancient inſtruments affords abundant evidence of a great diſproportion between their practice and their theory; it is nevertheleſs worthy of remark, that they who were ſo ſkilful and accurate in the invention of characters and ſymbols, the types not only of things but of images or ideas, as the Greeks are allowed to have been, have, in the inſtance of muſic, manifeſted a great want of that faculty, inaſmuch as there is not to be found in any of the characters in the ancient muſical notation, the leaſt analogy or relation between the ſign and the ſound or thing ſignified; a perfection ſo obvious in the practice of the moderns, that we contemplate it with aſtoniſhment, there being no poſſible arrangement or diſpoſition of muſical ſounds, nor no ſeries or ſucceſſion of equal or unequal, ſimilar or diſſimilar meaſures, but may with the greateſt accuracy be deſcribed by the ſtave of Guido, and the forms of notes with their adjuncts, as directed by the rules of the Cantus Menſurabilis; inſomuch that the modern ſyſtem of notation, comprehending in it the types or ſymbols of things, and

not

not of notions or ideas, may be ſaid to poſſeſs all the advantages of a real character.

To celebrate formally the praiſes of muſic in a work, the deſign whereof is to diſplay its excellencies, may ſeem unneceſſary; and the rather, as it has from the infancy of the world, with hiſtorians, orators, and poets, been a ſubject of panegyric: Beſides the power and effect of muſical ſounds to aſſuage grief and awaken the mind to the enjoyment of its faculties, is acknowledged by the moſt intelligent of mankind; and, were it neceſſary, to prove that the love of muſic is implanted in us, and not the effect of refinement, examples thereof might be produced from the practice of thoſe, who, from their particular ſituation of country, or circumſtances of life, are preſumed to approach nearly to that ſtate in which the natural and genuine ſuggeſtions of the will are ſuppoſed to be moſt clearly diſcernible. To ſay nothing of the Turks, who are avowed enemies of literature, or of the Chineſe, who, as has been ſhewn, notwithſtanding all that is aſſerted of them, are ſo circumſtanced, as ſeemingly never to be able to attain to any degree of excellence, nations the moſt ſavage and barbarous profeſs to admit muſic into their ſolemnities, ſuch as they are, their rejoicings, their triumphs for victories, the meetings of their tribes, their feaſts and their marriages; and to uſe it for their recreation and private ſolace *. St. Chryſoſtom, in his Homily on

* Father Lafitau, in his Mœurs des Sauvages, tome II. page 213, et ſeq. has given a full deſcription of the feſtal ſolemnities, accompanied with muſic, of the Iroquois, Hurons, and other tribes of American ſavages; and in the Royal Commentaries of Peru, book II. chap. xiv. the author, Garcilaſſo de la Vega, beſides informing us that their fabulous ſongs were innumerable, and carried in them the evidence of a ſavage ſpirit, ſpeaks thus particularly of their muſic: 'In muſick they arrived to a certain 'harmony, in which the Indians of Colla did more particularly excell, having been 'the inventors of a certain pipe made of canes glued together, every one of which 'having a different note of higher and lower, in the manner of organs, made a 'pleaſing muſick by the diſſonancy of ſounds, the treble, tenor and baſſe exactly 'correſponding and anſwering each to other; with theſe pipes they often plaid 'in concert, and made tolerable muſick, though they wanted the quavers, ſemi-'quavers, aires, and many voices, which perfect the harmony amongſt us. They

'had

pſalm xli. eſtimates the importance of muſic by its univerſality, and, in a ſtrain of ſimplicity, correſponding with the manners of the times in which he lived, ſays that human nature is ſo delighted with canticles and poems, that by them infants at the breaſt when they are froward or in pain, are lulled to reſt; that travellers in the heat of noon, driving their beaſts, ſuch as are occupied in rural labours, as treading or preſſing grapes, or bringing home the vintage; and even mariners labouring at the oar, as alſo women at their diſtaff, deceive

'had alſo other pipes, which were flutes with four or five ſtops, like the pipes of 'ſhepherds; with theſe they played not in conſort, but ſingly, and tuned them to 'ſonnets, which they compoſed in metre, the ſubject of which was love, and the 'paſſions which ariſe from the favours or diſpleaſures of a miſtreſs. Theſe muſi-'cians were Indians trained up in that art for divertiſement of the Incas, and the 'Curacas, who were his nobles, which, as ruſtical and barbarous as it was, it was 'not common, but acquired with great induſtry and ſtudy.'

'Every ſong was ſet to its proper tune; for two ſongs of different ſubjects 'could not correſpond with the ſame aire, by reaſon that the muſick which the 'gallant made on his flute, was deſigned to expreſs the ſatisfaction or diſcontent of 'his mind, which were not ſo intelligible perhaps by the words, as by the melan-'choly or chearfulneſs of the tune which he plaid. A certain Spaniard one night 'late encountered an Indian woman in the ſtreets of Cozco, and would have 'brought her back to his lodgings; but ſhe cryed out, "For God's ſake, Sir, let "me go, for that pipe which you hear in yonder tower calls me with great paſſion, "and I cannot refuſe the ſummons, for love conſtrains me to go, that I may be "his wife and he my huſband."

'The ſongs which they compoſed of their wars and grand atchievements were 'never ſet to the aires of their flutes, being too grave and ſerious to be intermixed 'with the pleaſures and ſoftneſſes of love; for thoſe were onely ſung at their prin-'cipal feſtivals, when they commemorated their victories and triumphs. When I 'came from Peru, which was in the year 1560, there were then five Indians reſiding 'at Cozco, who were great maſters on the flute, and could play readily by book any 'tune that was laid before them; they belonged to one Juan Rodriguez, who 'lived at a village called Labos, not far from the city: And now at this time, 'being the year 1602, 'tis reported that the Indians are ſo well improved in muſick, 'that it was a common thing for a man to ſound divers kinds of inſtruments; but 'vocal muſick was not ſo uſual in my time, perhaps becauſe they did not much practiſe 'their voices, though the mongrils, or ſuch as came of a mixture of Spaniſh and 'Indian blood, had the faculty to ſing with a tunable and a ſweet voice.'

the

the time, and mitigate the ſeverity of their labour by ſongs adapted to their ſeveral employments or peculiar conditions. Clearchus relates that at Leſbos the people had a ſong which they ſung while they were grinding corn, and for that reaſon called επιμυλιον; and Thales affirms that he had heard a female ſlave of that country ſinging it, turning the mill: It began 'Mole piſtrinum mole, nam et Pittacus molit rex 'magnæ Mitylenæ,' and alluded to the practice of that king, who was uſed to grind corn with a hand-mill, eſteeming it a healthy exerciſe.

Other writers go farther, and affect to diſcern the principles of muſic not only in the ſongs, but the occupations and exerciſes of artificers and even labourers; one of theſe in a vein of enthuſiaſm, perhaps more humorous and ſingular than perſuaſive, ſays, 'What ſhall I 'ſpeak of that pettie and counterfeit muſic which carters make with 'their whips, hempknockers with their beetels, ſpinners with their 'wheels, barbers with their ſizzers, ſmithes with their hammers? 'where methinkes the maſter-ſmith with his treble hammer ſings 'deſkant whileſt the greater buz upon the plainſong: Who doth not 'ſtraitwaies imagin upon muſick when he hears his maids either at 'the woolhurdle or the milking pail? good God, what diſtinct inten-'tion and remiſſion is there of their ſtrokes? what orderly dividing of 'their ſtraines? what artificial pitching of their ſtops *?'

But beſides the pleaſure that men derive from muſic, this ſatisfaction ariſes from the ſtudy of it, that its principles are founded in the very frame and conſtitution of the univerſe, and are as clearly demonſtrable as mathematical truth and certainty can render them; and in this reſpect muſic may be ſaid to have an advantage over many ſciences

* The Praiſe of Muſicke, 8vo. printed anno 1586, at Oxford, for Joſeph Barnes, but conjectured to have been written by Dr. John Caſe, page 76. Of this perſon there is a curious account in Athen. Oxon. col. 299. Thomas Ravenſcroft, in the Apologie prefixed to his diſcourſe on the true characterıng of muſic, publiſhed in 1614, cites it as a work of Dr. Caſe, whom he ſtyles a 'Mæcenas of 'muſicke.'

and faculties in the purſuit whereof the attention of mankind has at different periods been deeply engaged: To ſay nothing of ſchool divinity, which, happily for the world, has given place to rational theology, what can be ſaid of law in general, other than that it is mere human invention? a fabric of ſcience erected it is true on the baſis of a few uncontrovertible principles of morality, and of that which we call natural juſtice, but ſo accommodated to particular circumſtances, to the genius, ſituation, temper, and capacities of thoſe who are the objects of it, as that what is permitted and encouraged in one country, poligamy, for inſtance, ſhall be puniſhed in another. In ſome conſtitutions a difference of ſex ſhall aggravate the guilt of the ſame offence; and cuſtom and uſage ſhall preſerve the inheritance of the parent for the benefit of the eldeſt of his male deſcendants with the ſame pretence to juſtice as the law of nature and reaſon diſtributes it among them all. Finally, what ſhall we ſay to that ſyſtem of juriſprudence, which, being allowed to be imperfect, craves the aid of equity to regulate its operation, and mitigate its rigours? or of thoſe gloſſes and comments which in the civil and canon law are of little leſs authority than the laws themſelves?

As to medicine, ſetting aſide the knowledge of the human frame, and the uſes of its conſtituent parts, a noble ſubject of ſpeculation it muſt be confeſſed, the wiſer part of men, rejecting theory as vain and deluſive, reſolve the whole of the ſcience into obſervation and practice; thereby confeſſing that its principles are either very few, or ſo void of certainty, as not with ſafety to be relied on.

Of other liberal arts, ſuch as grammar, logic, and rhetoric, it muſt be allowed that they are of ſingular uſe; but, as being the mere inventions of men, and at beſt auxiliaries to other arts or faculties, they are in their nature ſubordinate, and in that reſpect do but reſemble the art of memory, which all men know to be founded on principles not exiſting in nature, but aſſumed by ourſelves; widely differing from thoſe which are the baſis as well of muſical as mathematical ſcience.

From

From this view of the comparative excellence of muſic, and its pre-eminence over many other ſciences and faculties, we become convinced of the ſtability of its principles, and are therefore at a loſs for the reaſons why, in theſe later times at leaſt, novelty in muſic ſhould be its beſt recommendation; or that the love of variety ſhould ſo poſſeſs the generality of hearers, as almoſt to leave it a queſtion whether or no it has any principles at all.

To ſatisfy theſe doubts, it may be ſufficient to obſerve that the principles of harmony allow, as it is fit they ſhould, great ſcope for the exerciſe of the invention; and though few pretend to ſkill in the arts without being in ſome degree or other poſſeſſed of it, yet as all the imaginative arts preſuppoſe a diſpoſition in mankind to receive their impreſſions, all claim a right, and many the ability, to judge of works of invention and fancy.

The epic poet, truſting that the mind of his reader is co-extenſive with his own, endeavours to excite in him the ideas of ſublimity and beauty; the dramatic writer hopes to move the affections of his audience to terror and pity by the repreſentation of actions, the reflection on which inſpired his mind with thoſe paſſions; and the painter, giving form to thoſe ideas of grace, greatneſs, and character which occupy his mind, or ſelecting the beauties of nature, and transferring them to canvas, or at other times contenting himſelf with ſimple imitation, in all theſe exerciſes of imagination and art, expects from the judgment of the well-informed connoiſſeur the approbation of his work.

Now in the ſeveral inſtances above adduced, notwithſtanding the conceſſions made to them, we may diſcern in the generality of men the want of that ſenſe to which the appeal is made; for, with reſpect to the epic poem, few are endowed with an imagination ſufficiently capacious to diſcover its beauties; and as to dramatic repreſentation, the moſt favourite of all public entertainments, although all men pretend to be judges of nature, and the cant of theatres has perſuaded moſt that they are ſo, few are acquainted with

her operations in the various inſtances exhibited on the ſtage, or know with any kind of certainty in what manner the actor is to ſpeak, what tones or inflexions of the voice are appropriated to different paſſions, or what are the proper geſticulations to expreſs or accompany the ſentiment which he is to utter. How many individuals among thoſe numerous audiences, who for a ſeries of years paſt have affected to admire our great dramatic poet, may we ſuppoſe capable of diſcerning his ſenſe, delivered in a ſtyle of dialogue very little reſembling that of the preſent day, or of reliſhing thoſe high philoſophical ſentiments with which his compoſitions and thoſe of Milton abound? * The anſwer muſt be very few: Even humour, a talent which lies level with the obſervation of the many, is not alike intelligible to all; and ſome are diſguſted with thoſe delineations of low manners, however juſt and natural, that afford delight to others, as exhibiting to view the human mind in the ſimplicity of nature, and free from thoſe reſtraints which are impoſed on it by education and refinement.

The painter, in like manner, ſubmitting his work to the public cenſure, ſhall find for one that will applaud the grandeur of the deſign, the fineneſs of the compoſition, or the correctneſs of the drawing, a hundred that would have diſpenſed with all theſe excellencies for a greater glare of colouring, and attitudes ſuited to their own ideas of grace and elegance.

* The maſque of Comus, written for the entertainment of a noble family, and a company of choſen ſpectators, which within theſe few years was introduced on the public ſtage, may ſeem to contradict this obſervation, for this reaſon, that although the ſentiments contained in it are well known to be drawn from the Platonic, the ſublimeſt of all philoſophy; and the imagery has an immediate and uniform reference to the fictions of mythology, it afforded great entertainment to the upper gallery; and the performance gave riſe to ſundry meetings for the purpoſe of drinking and ſinging, ſome of which were dignified with the name of Comus's Court. Nevertheleſs it may be ſuppoſed that the mirth of the enchanter and his crew were more ſenſibly felt by the multitude than the charms of divine philoſophy, which the author endeavours to diſplay, or the reliance on divine providence, which it is the end of the poem to inculcate.

The caſe is the ſame in ſculpture and architecture; to ſpeak of the firſt: In Roubiliac's ſtatue of Mr. Handel at Vauxhall, few are ſtruck with the eaſe and gracefulneſs of the attitude, the dignity of the figure, the artful diſpoſition of the drapery, or the manly plumpneſs and rotundity of the limbs, but all admire how naturally the ſlipper depends from the left foot. In works of architecture we look for elegance joined with ſtability; for ſymmetry, harmony of parts, and a judicious and beautiful arrangement of pleaſing forms; but to theſe a vulgar eye is blind; whatever is great or maſſy, it rejects as heavy and clumſey: Such judges as theſe prefer for its lightneſs a Chineſe to a Palladian bridge; and are pleaſed with a diagonal view of the towers at the weſt end of St. Paul's cathedral, for the ſame reaſon as they are with a bird cage.

Finally, with reſpect to muſic, it muſt neceſſarily be, that the operation of its intrinſic powers can extend no farther than to thoſe whom nature has endowed with the faculty which it is calculated to delight; and that a privation of that ſenſe, which, ſuperadded to the hearing, is ultimately affected by the harmony of muſical ſounds, muſt diſable many, and, as ſome compute, not fewer than nine out of ten, from receiving that gratification in muſic which others experience. Such hearers as theſe are inſenſible of its charms, which yet they labour to perſuade themſelves are very powerful; but finding little effect from them, they ſeek for that gratification in novelty which novelty will not afford; and hence ariſes that inceſſant demand for variety which has induced ſome to imagine that muſic is in its very nature as mutable as faſhion itſelf. It may be ſufficient in this place to have pointed out the reaſons or cauſes of this erroneous opinion of the nature and end of muſic, the effects and operation thereof will be the ſubject of future diſquiſition.

In the interim it muſt be confeſſed that there is ſomewhat humiliating in a diſcrimination of mankind, that tends to exclude the greater number of them from the enjoyment of thoſe elegant and refined pleaſures which the works of genius and invention afford; but this condition

of

of human nature is capable of proof, and is juſtified by that partial diſpenſation of thoſe faculties and endowments which we are taught to conſider as bleſſings, and which no one without impiety can cenſure. Seeing this to be the caſe, it may be aſked how comes it to paſs that a ſenſe of what is true, juſt, elegant, and beautiful in any of the abovementioned arts, exiſts as it does at this day? or that there are any works of genius which men with one common conſent profeſs to applaud and admire as the ſtandards of perfection? To this it may be anſwered, that although the right of private judgment is in ſome degree exerciſed by all, it is controuled by the few; and it is the uniform teſtimony of men of diſcernment alone that ſtamps a character on the productions of genius, and conſigns them either to oblivion or immortality.

It is beſide the purpoſe of the preſent diſcourſe to enter into a minute inveſtigation of any particular branch of the ſcience of which this work is the hiſtory; what is here propoſed is the communication of that intelligence which ſeemed but the prerequiſite to the underſtanding of what will hereafter be ſaid on the ſubject. This was the inducement to the above obſervations on Taſte, and the motives that influence it; and this muſt be the apology for a further examen, a pretty free one it may be ſaid, of thoſe muſical entertainments, and that kind of muſical performance which the public are at preſent moſt diſpoſed to favour.

The preſent great ſource of muſical delight throughout Europe, is the opera, or, as the French call it, the muſical tragedy, concerning which it is to be known, that, if regard be due to the opinions of ſome writers, who yet are no friends to this entertainment, it is a revival of the old Roman tragedy; and it ſeems that the inventors of the modern recitative, Jacopo Peri and Giulio Caccini wiſhed to have it thought ſo; foraſmuch as they profeſſed in this ſpecies of muſical intonation to imitate the practice of the ancients, remarking with great accuracy the ſeveral modes of pronunciation, and the notes and accents proper to expreſs grief, joy, and the other affections of the human

man mind; but by what exemplars they regulated their imitation we are no where told; and it is to be conjectured that thoſe general directions for pronunciation, which are to be found in many diſcourſes on the ſubject of oratory, were the chief ſources whence their intelligence was derived.

In what other reſpects the muſical repreſentations of the ancients and moderns bear a reſemblance to each other it is not neceſſary here to enquire; it may ſuffice to ſay of the modern opera, that by the ſober and judicious part of mankind it has ever been conſidered as the mere offspring of luxury; and thoſe who have examined it with a critical eye, ſcruple not to pronounce that it is of all entertainments the moſt unnatural and abſurd. To deſcend to particulars in proof of this aſſertion, would be but to repeat arguments which have already been urged, with little ſucceſs it is true, but with great force of reaſon, aided by all the powers of wit and humour.

The principal objections againſt the opera are ſummed up by an author, who, though a profeſſed lover of muſic, has ſhewn his candour in deſcribing the genuine effect of repreſentations of this kind on an unprejudiced ear. The perſon here ſpoken of is Monſ. St. Evremond, and the following are his ſentiments.

'I am no great admirer of comedies in muſic *, ſuch as now-a-
'days are in requeſt. I confeſs I am not diſpleaſed with their mag-
'nificence; the machines have ſomething that is ſurpriſing; the
'muſick, in ſome places, is charming, the whole together ſeems won-
'derful: But it muſt be granted me alſo, that this wonderful is very
'tedious; for where the mind has ſo little to do, there the ſenſes muſt
'of neceſſity languiſh. After the firſt pleaſure that ſurprize gives us,
'the eyes are taken up, and at length grow weary of being conti-

* The word COMEDIE in French comprehends every kind of theatrical repreſentation; a truer deſignation of an opera is the term Tragedie en Muſique; thoſe of Lully are in general ſo called in the title-page; and it is plain by the context that the author means not the comic but the tragic opera.

'nually

'nually fixed upon the ſame object. In the beginning of the con-
'ſorts we obſerve the juſtneſs of the concords; and amidſt all the va-
'rieties that unite to make the ſweetneſs of the harmony, nothing
'eſcapes us. But 'tis not long before the inſtruments ſtun us, and the
'muſick is nothing elſe to our ears but a confuſed ſound that ſuffers
'nothing to be diſtinguiſhed. Now how is it poſſible to avoid being
'tired with the Recitativo, which has neither the charm of ſinging,
'nor the agreeable energy of ſpeech? The ſoul fatigued by a long
'attention, wherein it finds nothing to affect it, ſeeks ſome relief
'within itſelf; and the mind, which in vain expected to be enter-
'tained with the ſhow, either gives way to idle muſing, or is diſſatis-
'fied that it has nothing to employ it. In a word, the fatigue is ſo
'univerſal, that every one wiſhes himſelf out of the houſe, and the
'only comfort that is left to the poor ſpectators, is the hopes that the
'ſhow will ſoon be over.

'The reaſon why, commonly, I ſoon grow weary at operas is, that
'I never yet ſaw any which appeared not to me deſpicable, both as to
'the contrivance of the ſubject, and the poetry. Now it is in vain to
'charm the ears, or gratify the eyes, if the mind be not ſatisfied; for
'my ſoul being in better intelligence with my mind than with my
'ſenſes, ſtruggles againſt the impreſſions which it may receive, or at
'leaſt does not give an agreeable conſent to them, without which even
'the moſt delightful objects can never afford me any great pleaſure.
'An extravagance, ſet off with muſick, dances, machines, and fine
'ſcenes, is a pompous piece of folly, but 'tis ſtill a folly. Tho' the
'embroidery is rich, yet the ground it is wrought upon is ſuch
'wretched ſtuff, that it offends the ſight.

'There is another thing in operas ſo contrary to nature, that I can-
'not be reconciled to it, and that is the ſinging of the whole piece,
'from beginning to end, as if the perſons repreſented were ridiculouſly
'matched, and had agreed to treat in muſick both the moſt common,
'and moſt important affairs of life. Is it to be imagined that a maſter
'calls his ſervant, or ſends him on an errand, ſinging; that one friend

'imparts

'imparts a ſecret to another, ſinging; that men deliberate in council 'ſinging; that orders in time of battle are given ſinging; and that 'men are melodiouſly kill'd with ſwords and darts. This is the 'downright way to loſe the life of repreſentation, which without 'doubt is preferable to that of harmony; for harmony ought to be 'no more than a bare attendant, and the great maſters of the ſtage 'have introduced it as pleaſing, not as neceſſary, after they have per-'form'd all that relates to the ſubject and diſcourſe. Nevertheleſs 'our thoughts run more upon the muſician than the hero in the 'opera; Luigi, Cavallo, and Ceſti, are ſtill preſent to our imagina-'tion. The mind not being able to conceive a hero that ſings, thinks 'of the compoſer that ſet the ſong; and I don't queſtion but that in 'the operas at the Palace Royal, Baptiſt is an hundred times more 'thought of than Theſeus or Cadmus *.'

The ſame author, ſpeaking of recitative, particularly that of the Venetian opera, ſays that it is neither ſinging nor reciting †, but

* Works of Monſ. St. Evremond, vol. II. page 84, in a letter to Villiers, duke of Buckingham.

† This remark upon examination will be found to be but too true, notwithſtanding the arguments in favour of recitative, which amount in ſubſtance to this, that it is a kind of proſe in muſic, that its beauty conſiſts in coming near nature, and in improving the natural accents of words by more pathetic or emphatical tones. Preface to the opera of Semele by Mr. Congreve. Mr. Hughes, to the ſame purpoſe, delivers theſe as his ſentiments: 'The recitative ſtyle in compoſition is founded on 'that variety of accent which pleaſes in the pronunciation of a good orator, with as 'little deviation from it as poſſible. The different tones of the voice in aſtoniſhment, 'joy, ſorrow, rage, tenderneſs, in affirmations, apoſtrophes, interrogations, and all 'the other varieties of ſpeech, make a ſort of natural muſick which is very agree-'able; and this is what is intended to be imitated, with ſome helps, by the compo-'ſer, but without approaching to what we call a tune or air; ſo that it is but a 'kind of improved elocution.' Preface to Mr. Hughes's Cantatas in the firſt volume of his Poems.

Upon theſe ſeveral paſſages it may be remarked, that in the expreſſion of the paſſions nature doth not offer muſical ſounds to the human ear: For though the natural tones of grief and joy, the two paſſions which are moſt effectually expreſſed by muſic, approach nearer to muſical preciſion than any other, yet ſtill they are in-

ſomewhat unknown to the ancients, which may be defined to be an aukward uſe of muſic and ſpeech *.

It may perhaps be ſaid that muſic owes much of its late improvement to the theatre, and to that emulation which it has a tendency to excite, as well in compoſers as performers; but who will pretend to ſay what direction the ſtudies of the moſt eminent muſicians of late years would have taken, had they been left to themſelves; it being moſt certain that every one of that character has two taſtes, the

concinnous and unmuſical. Farther, that the ſounds of the voice in ſpeech are immuſical is aſſerted by Lord Bacon in the following paſſage: 'All ſounds 'are either muſical ſounds, which we call tones, whereunto there may be an 'harmony; which ſounds are ever equal, as ſinging, the ſounds of ſtringed and 'wind inſtruments, the ringing of bells, &c. or immuſical ſounds, which are ever 'unequal; ſuch as are the voice in ſpeaking, all whiſperings, all voices of beaſts 'and birds, except they be ſinging-birds, all percuſſions of ſtones, wood, parchment, 'ſkins, as in drums, and infinite others.' Nat. Hiſt. cent. II. ſect. 101.

The concluſion from theſe premiſes muſt be, that muſical ſounds do not imitate common ſpeech; and therefore that recitative can in no degree be ſaid to be an improvement of elocution.

But admitting the contrary to be the caſe, and that the ſounds of ſpeech were equally muſical with thoſe employed in recitative, the inflexions of the voice are too minute to fall in with the diviſion of the ſcale, allowing even the enarmonic dieſis, or the comma, the ſmalleſt of all ſenſible intervals, to make a part of it; and of this opinion is Monſ. Duclos, who, in the Encyclopedia, art. DECLAMATION DES ANCIENS, for this reaſon denies the poſſibility of a notation for ſpeech.

Upon the whole, the beauties of the recitative ſtyle in muſic conſiſt not in the power of imitating the tones, much leſs the various inflexions of the voice in ſpeech, but in the varieties of accent and melody, which follow from its not being ſubject to metrical laws: In ſhort, what has been ſaid and inſiſted on in this diſcourſe of muſic in general, may be applied to recitative, viz. that its mimetic powers are very inconſiderable, and that whatever charms it poſſeſſes are abſolute and inherent.

* Theſe obſervations of St. Evremond reſpect the muſical tragedy, but the Italians have alſo a muſical comedy called a Burletta, which has been lately introduced into England, and given riſe to the diſtinction in the advertiſements for ſubſcriptions of firſt, ſecond, &c. *ſerious* man or woman. This entertainment affords additional proof how little muſic, as ſuch, is able to ſupport itſelf: In the tragic opera it borrows aid from the tumidity of the poetry; in the comic, from the powers of ridicule, to which muſic has not the leaſt relation.

one

one for himſelf, and the other for the public? Purcell has given a plain indication of his own, in a declaration that the gravity and ſerioufneſs of the Italian muſic were by him thought worthy of imitation*: The ſtudies of Stradella, Scarlatti, and Bononcini for their own delight were not ſongs or airs calculated to aſtoniſh the hearers with the tricks of the ſinger, but cantatas and duets, in which the ſweetneſs of the melody, and the juſt expreſſion of fine poetical ſentiments, were their chief praiſe; or madrigals for four or more voices, wherein the various excellencies of melody and harmony were united, ſo as to leave a laſting impreſſion on the mind. The ſame may be ſaid of Mr. Handel, who, to go no farther, has given a ſpecimen of the ſtyle he moſt affected in a volume of leſſons for the harpſichord, with which no one will ſay that any modern compoſitions of the kind can ſtand in competition. Theſe, as they were made for the practice of an illuſtrious perſonage, as happy in an exquiſite taſte and correct judgment as a fine hand, may be ſuppoſed to be, and were in fact compoſitions con amore. In other inſtances this great muſician compounded the matter with the public, alternately purſuing the ſuggeſtions of his fancy, and gratifying a taſte which he held in contempt †.

Whoever is curious to know what that taſte could be, to which ſo great a maſter as Mr. Handel was compelled occaſionally to conform, in prejudice to his own, will find it to have been no other than that which is common to every promiſcuous auditory, with whom it is a notion that the right, and as ſome may think, the ability to judge, to applaud and condemn is purchaſed by the price of admittance; a taſte that leads all

* It is worth remarking that the poets, who of all writers ſeem the moſt ſenſible of the efficacy of muſic, appear uniformly to conſider it as an intellectual, and conſequently a ſerious pleaſure, engaging not only the attention of the ear, but the powers and faculties of the ſoul. To this end, and not for the purpoſe of exciting mirth, it is in numberleſs inſtances introduced by Shakeſpeare; and among the poems of Milton is one entitled 'At a ſolemn Muſic.'

† An intimate friend of Mr. Handel, looking over the ſcore of an opera newly compoſed by him, obſerved of ſome of the ſongs that they were excellent: You may think ſo, ſays Mr. Handel, but it is not to them, but to theſe, turning to others of a vulgar caſt, that I truſt for the ſucceſs of the opera.

who poſſeſs it to prefer light and trivial airs, and ſuch as are eaſily retained in memory, to the fineſt harmony and modulation; and to be better pleaſed with the licentious exceſſes of a ſinger, than the true and juſt intonation of the ſweeteſt and moſt pathetic melodies, adorned with all the graces and elegancies that art can ſuggeſt. Such critics as theſe, in their judgment of inſtrumental performance, uniformly determine in favour of whatever is moſt difficult in the execution, and, like the ſpectators of a rope-dance, are never more delighted than when the artiſt is in ſuch a ſituation as to render it doubtful whether he ſhall incur or eſcape diſgrace.

To ſuch a propenſity as this, the gratifications whereof are of neceſſity but momentary, leaving no impreſſion upon the mind, we may refer the ardent thirſt of novelty in muſic, and that almoſt general reprobation of whatever is old, againſt the ſenſe of the poet:

> Now, good Ceſario, but that piece of ſong,
> That old and antique ſong we had laſt night,
> Methought it did relieve my paſſion much;
> More than light airs, and recollected terms
> Of theſe moſt briſk and giddy-paced times.
>
> TWELFTH-NIGHT, Act II. Scene iv.

But to account for it is in no ſmall degree difficult: To juſtify it, it is ſaid that there is a natural viciſſitude of things, and that it were vain to expect that muſic ſhould be permanent in a world where change ſeems to predominate.

But it may here be obſerved, that there are certain laws of nature that are immutable and independent on time or place, the precepts of morality and axioms in phyſics for inſtance; there never was ſince the creation a time when there did not exiſt an irreconcileable difference between truth and falſehood; or when two things, each equal to the ſame third, were unequal one to the other; or, to carry the argument farther, when conſonance and diſſonance were not as eſſentially diſtinguiſhed from each other, both in their ratios and by their effects, as they

they are at this day; or when certain interchanges of colours, or forms and arrangements of bodies were leſs pleaſing to the eye than the ſame are now; from whence it ſhould ſeem that there are ſome ſubjects on which this principle of mutation does not operate: And, to ſpeak of muſic alone, that, to juſtify the love of that novelty which ſeems capable of recommending almoſt any production, ſome other reaſons muſt be reſorted to than thoſe above.

But, declining all farther reſearch into the reaſon or cauſes of this principle, let us attend to its effects; and theſe are viſible in the almoſt total ignorance which prevails of the merits of moſt of the many excellent artiſts who flouriſhed in the ages preceding our own: Of Tye, of Redford, Shephard, Douland, Weelkes, Wilbye, Eſt, Bateſon, Hilton, and Brewer, we know little more than their names; theſe men compoſed volumes which are now diſperſed and irretrievably loſt, yet did their compoſitions ſuggeſt thoſe ideas of the power and efficacy of muſic, and thoſe deſcriptions of its manifold charms that occur in the verſes of our beſt poets. To ſay that theſe and the compoſitions of their ſucceſſors Blow, Purcell, Humphrey, Wiſe, Weldon, and others were admired merely becauſe they were new, is begging a queſtion that will be beſt decided by a compariſon, which ſome of the greateſt among the profeſſors of the art at this day would ſhrink from.

Upwards of two hundred years have elapſed ſince the anthem of Dr. Tye, 'I will exalt thee,' was compoſed; and near as long a time ſince Tallis compoſed the motet 'O ſacrum convivium,' which is now ſung as an anthem to the words 'I call and cry to thee, O Lord;' and it is comparatively but a few years ſince Geminiani was heard to exclaim in a rapture that the author of it was inſpired *. Amidſt all the va-

* To this teſtimony we may add that of a foreigner reſpecting the church-muſic of queen Elizabeth's days, thus recorded by Strype in his Annals of the Reformation, vol. II. page 314.

'In her [the queen's] paſſing, (I ſay) ſhe viſited Canterbury; how magnificently 'ſhe was received and entertained here by archbiſhop Parker, I have related elſe-'where. This I only add, that while ſhe was here, the French ambaſſador came

'to

rieties of compoſition in canon, which the learning and ingenuity of the ableſt muſicians have produced, that of Bird, compoſed in the reign of his miſtreſs Elizabeth, is conſidered as a model of perfection. Dr. Blow's ſong, 'Go, perjured man,' was compoſed at the command of king Charles the Second, and Purcell's 'Sing all ye Muſes,' in the reign of his ſucceſſor; but no man has as yet been bold enough to attempt to rival either of theſe compoſitions. Nor is there any of the vocal kind, conſiſting of recitative and air, which can ſtand a competition with thoſe two cantatas, for ſo we may venture to call them, 'From 'roſy bowers,' and 'From ſilent ſhades.'

Of poetry, painting, and ſculpture, it has been obſerved that they have at different periods flouriſhed and declined; and that there have been times when each of thoſe arts has been at greater perfection than now, is to be attributed to that viciſſitude of things which gave riſe to the preſent enquiry, and is implied in an obſervation of Lord Bacon, that in the youth of a ſtate arms do flouriſh, in its middle age learning, and in its decline mechanical arts and merchandize *. And if this obſervation on the various fates of poetry, painting, and ſculpture be true, why is it to be aſſumed of muſic that it is continually improving, or that every innovation in it muſt be for the better? That the muſic of the church has degenerated and been greatly corrupted by an intermixture of the theatric ſtyle, has long been a ſubject of complaint; the Abbat Gerbert laments this and other innovations in terms the moſt affecting †; and indeed the evidence of this corruption muſt be apparent to every one that reflects on the ſtyle

'to her. Who hearing the excellent muſic in the cathedral church, extolled it up 'to the ſky, and brake out into theſe words: "O God, I think no prince beſide in "all Europe ever heard the like, no, not our Holy Father the Pope himſelf." A 'young gentleman that ſtood by him replied, "Ah, do you compare our queen to "the knave of Rome, or rather prefer him before her?" Whereat the ambaſſador 'was highly angred, and told it to ſome of the councillors. They bade him be 'quiet, and take it patiently, for the boys, ſaid they, with us do ſo call him and 'the Roman Antichriſt too.'

* Eſſay of Viciſſitude of Things.

† De Cantu et Muſica Sacra, tom. II. pag. 375.

and

and ſtructure of thoſe compoſitions for the church that are now moſt celebrated abroad, even thoſe of Pergoleſi, his maſſes, for inſtance, and thoſe of Iomelli and Perez, have nothing that diſtinguiſhes them but the want of action and ſcenic decoration, from dramatic repreſentations: Like them they abound in ſymphony and the accompanyment of various inſtruments, no regard is paid to the ſenſe of the words, or care taken to ſuit it with correſpondent ſounds; the clauſes Kyrie Eleiſon and Chriſte Eleiſon, and Miſerere mei and Amen are uttered in dancing metres; and the former not ſeldom in that of a minuet or a jig. Even the funeral ſervice of Perez, lately publiſhed in London, ſo far as regards the meaſures of the ſeveral airs, and the inſtrumental aids to the voice-parts, differs as far from a ſacred and ſolemn compoſure as a burletta does from an opera or muſical tragedy.

From theſe premiſes it may be allowed to follow, that a retroſpect to the muſical productions of paſt ages is no ſuch abſurdity, as that a curious enquirer need decline it. No man ſcruples to do the like in painting; the connoiſſeurs are as free in remarking the excellencies of Raphael, Titian, Domenichino, and Guido, as in comparing ſucceeding artiſts with them; and very conſiderable benefits are found to reſult from this practice: Our preſent ignorance with reſpect to muſic may betray us into a confuſion of times and characters, but it is to be avoided by an attention to thoſe particular circumſtances that mark the ſeveral periods of its progreſs, its perfection and its decline.

Of the monkiſh muſic, that is to ſay the Cantus Eccleſiaſticus, little can be ſaid, other than that it was ſolemn and devout: After the introduction into the church ſervice of muſic in conſonance, great ſkill and learning were exerciſed in the compoſition of motets; but the elaborate contexture, and, above all, the affectation of muſical and arithmetical ſubtilties in theſe compoſitions, as they conduced but little to the ends of divine worſhip, ſubjected them to cenſure, and gave riſe to a ſtyle, which, for its ſimplicity and grandeur many look up to as the perfection of eccleſiaſtical harmony; and they are not a few who think that at the end of the ſixteenth century the Romiſh

church-

church-muſic was at its height, as alſo that with us of the reformed church its moſt flouriſhing ſtate was during the reign of Elizabeth; though others poſtpone it to the time of Charles II. grounding their opinion on the anthems of Blow, Humphrey, and Purcell, who received their firſt notions of fine melody from the works of Cariſſimi, Ceſti, Stradella, and others of the Italians.

For the perfection of vocal harmony we muſt refer to a period of about fifty years, commencing at the year 1560, during which were compoſed madrigals for private recreation in abundance, that are the models of excellence in their kind; and in this ſpecies of muſic the compoſers of our own country appear to be inferior to none. The improvement of melody is undoubtedly owing to the drama; and its union with harmony and an aſſemblage of all the graces and elegancies of both we may behold in the madrigals of Stradella and Bononcini, and the choruſſes and anthems of Handel; and among the compoſitions for private practice in the duets of Steffani and Handel. As to the harmony of inſtruments, it is the leaſt praiſe that can be beſtowed on the works of Corelli, Geminiani, and Martini, to ſay that through all the viciſſitudes and fluctuations of caprice and fancy, they retain their primitive power of engaging the affections, and recommending themſelves to all ſober and judicious hearers *.

* Of the inſtrumental muſic of the preſent day, notwithſtanding the learning and abilities of many compoſers, the characteriſtics of it are noiſe without harmony, exemplified in the frittering of paſſages into notes, requiring ſuch an inſtantaneous utterance, that thirty-two of them are frequently heard in the time which it would take moderately to count four; and of this caſt are the Symphonies, Periodical Overtures, Quartettos, Quintettos, and the reſt of the traſh daily obtruded on the world.

Of ſolos for the violin, an elegant ſpecies of compoſition, as is evident in thoſe moſt excellent ones of Corelli and Geminiani, and in many of thoſe of Le Clair, Carbonelli, Feſting, and Tartini, few have of late been publiſhed that will bear twice hearing; in general, the ſole end of them is to diſplay the powers of execution in prejudice to thoſe talents which are an artiſt's greateſt praiſe.

The leſſons for the harpſichord of Mr. Handel, abounding with fugues of the fineſt contexture, and the moſt pathetic airs, are an inexhauſtible fund of delight; thoſe of the preſent time have no other tendency than to degrade an inſtrument invented for

To muſic of ſuch acknowledged excellence as this, the preference of another kind, merely on the ſcore of its novelty, is ſurely abſurd; at leaſt the arguments in favour of it ſeem to be no better than thoſe of Mr. Bayes in behalf of what he calls the new way of dramatic writing; which however were not found to be of ſuch ſtrength as to withſtand the force of that ridicule, which was very ſeaſonably employed in reſtoring the people to their wits.

The performance on the organ is for the moſt part unpremeditated, as the term Voluntary, which is appropriated to that inſtrument, imports; we may therefore look on this practice as extemporary compoſition; and it is not enough to be regretted how much the applauſes beſtowed on the mere powers of execution have contributed to degrade it. Bird and Blow, as organiſts, are celebrated not ſo much for an exquiſite hand, as for their ſkill, and that fullneſs of harmony which diſtinguiſhed their performance, and which this noble inſtrument alone is calculated to exhibit *. The canzones of Freſcobaldi, Kerl, Krieger, and Thiel, and above all, the fugues of Mr. Handel, including thoſe in his leſſons, ſhew us what is the true organ ſtyle, and leave us to lament that the idea of a voluntary on the organ is loſt in thoſe Capriccios on a ſingle ſtop, which, as well in our parochial as cathedral ſervice, follow the pſalms. As to what is called a concerto on the organ, it is a kind of compoſition conſiſting chiefly of ſolo paſſages, contrived to diſplay what in modern muſical phraſe is termed a brilliant finger; and which, if attended to, will, amidſt the clamour of the accompanyment, in fact be found inſtead of four, to conſiſt of but two parts.

for the elegant recreation of the youthful of the other ſex, and to render it what at beſt it now appears to be, and may as truly as emphatically be termed, a tinkling cymbal.

* Old Mr. Arthur Bedford, chaplain to Aſke's Hoſpital at Hoxton, and who died not many years ago, was acquainted with Dr. Blow, and ſays of him that he was reckoned the greateſt maſter in the world for playing moſt gravely and ſeriouſly in his voluntaries. The Great Abuſe of Muſick, by Arthur Bedford, M. A. Lond. 8vo. 1711, page 248.

But of all the abuſes of inſtrumental performance, none is more injurious to muſic than the practice of ſingle inſtruments, exemplified in ſolos and ſolo concertos, originally intended for private recreation, but which are now conſidered as an eſſential part of a muſical entertainment. Muſic compoſed for a ſingle inſtrument, as conſiſting of the mere melody of one part, is leſs complicated than that which is contrived for many; and melody is ever more pleaſing to an unlearned ear than the harmony of different parts. The uniformity of a minuet, conſiſting of a determined number of bars, the emphaſis of each whereof returns in an orderly ſucceſſion of meaſures or times, correſponds with ſome ideas of metrical regularity which are common to all minds, and affords a reaſon for that delight which the ear receives from the pulſatile inſtruments. Hence it is eaſy to account for the obtruſion of ſuch compoſitions on the public ear as furniſh opportunities of diſplaying mere manual proficiency in the artiſt; a ſolo or a concerto on the violin, the violoncello, the hautboy, or ſome other ſuch inſtrument, does this, and gives ſcope for that exerciſe of a wild and exuberant fancy which diſtinguiſhes, or rather diſgraces, the inſtrumental performance of this day.

The firſt eſſays of this kind were ſolos for the violin, the deſign whereof was to affect the hearer by the tone of the inſtrument, and thoſe graces of expreſſion which are its known characteriſtic; but it was no ſooner found that the merit of theſe compoſitions was eſtimated by the difficulty of performing them, than the plaudits of the auditory became an irreſiſtible temptation to every kind of extravagance: Theſe have been ſucceeded by compoſitions of a like kind, but framed with a very different view, Solos and Concertos, containing paſſages that carried the melody beyond the utmoſt limits of the ſcale, indeed ſo high on the inſtrument, that the notes could not be diſtinctly articulated, in violation of a rule that Lord Bacon has laid down, that the mean tones of all inſtruments, as being the moſt ſweet, are to be preferred to thoſe at either extremity of either

the

the voice or inſtrument *. The laſt improvement of licentious practice has been the imitation of tones diſſimilar to thoſe of the violin, the flute, for inſtance, and thoſe that reſemble the whiſtling of birds; and the ſame tricks are played with the violoncello. To what farther lengths theſe extravagancies will be carried, time only can diſcover.

Amidſt that ſtupor of the auditory faculties, which leads to the admiration of whatever is wild and irregular in muſic, a judicious hearer is neceſſitated to ſeek for delight in thoſe compoſitions, which, as owing their preſent exiſtence ſolely to their merit, muſt, like the writings of the claſſic authors, be looked on as the ſtandards of perfection; in the grave and ſolemn ſtrains of the moſt celebrated compoſers for the church, including thoſe of our own country, who in the opinion of the beſt judges are inferior to none †; or in the gayer

* Nat. Hiſt. cent. II. ſect. 173. The Sylva Sylvarum, or Natural Hiſtory of Lord Bacon, contains a great variety of experiments and obſervations tending to explain the properties of ſound and the nature of harmony. The following judicious remark may ſerve as a ſpecimen of the author's ſkill in his ſubject, and at the ſame time ſhew his ſentiments of harmony, and in what he conceived the perfection thereof to conſiſt. 'The ſweeteſt and beſt harmony is, when every part or inſtrument is not heard by itſelf, but a conflation of them all; which requireth to ſtand ſome diſtance off, even as it is in the mixture of perfumes, or the taking of the ſmells of ſeveral flowers in the air.' Cent. III. ſect. 225.

† Such muſic as this has been the delight of the wiſeſt men in all ages. Luther, who was ſo great an admirer of muſic, that he ſcrupled not, as a ſcience, to rank it next to theology, which is ſtyled the queen of the ſciences, was often uſed to be recreated with the ſinging of motets. Biſhop Williams, while he was lord keeper, choſe to retain the deanery of Weſtminſter for the ſake of the choral ſervice performed there: 'He was loath,' ſays his hiſtorian, 'to ſtir from that ſeat where he had the command of ſuch exquiſite muſic:' And in a more particular manner the ſame perſon ſpeaks of the love which that great prelate bore to muſic, for, ſays he, 'that God might be praiſed with a chearful noiſe in his ſanctuary, he procured 'the ſweeteſt muſic both for the organ and voices of all parts that ever was heard 'in an Engliſh quire. In thoſe days that abbey and the Jeruſalem Chamber, where 'he gave entertainment, were the volaries of the choiceſt ſingers that the land had 'bred.' Life of the Lord Keeper Williams by Hackett, Biſhop of Litchfield and Coventry, pag. 62, 46. Milton has been very explicit in declaring what

and more elegant compoſitions, as well inſtrumental as vocal, of others contrived for the recreation and ſolace, in private aſſemblies and ſelect companies, of perſons competently ſkilled in the ſcience.

How far remote that period may be when muſic of this kind ſhall become the object of the public choice, no one can pretend to tell: To ſpeak of muſic for inſtruments, the modern refinements in practice, and the late improvements in the powers of execution have placed it beyond the reach of view: and it affords but ſmall ſatisfaction to a lover of the art to reflect that the world is in poſſeſſion of ſuch inſtrumental compoſitions as thoſe of Corelli, Bononcini, Geminiani, and Handel, when not one principal performer in ten has any reliſh of their excellencies, or can be prevailed on to execute them but with ſuch a degree of unfeeling rapidity, as to deſtroy their effect, and utterly to defeat the intention of the author. In ſuch kind of performance, wherein not the leaſt regard is paid to harmony or expreſſion, we ſeek in vain for that moſt excellent attribute of muſic, its power to move the paſſions, without which this divine ſcience muſt be conſidered in no better a view than as the means of recreation to a gaping crowd, inſenſible of its charms, and ignorant of its worth.

what kind of muſic delighted him moſt, in the verſes entitled 'At a ſolemn muſic.' Dr. Buſby, the maſter of Weſtminſter-ſchool had an organ, and muſic of the moſt ſolemn kind in his houſe at the time when choral ſervice was throughout the kingdom forbidden to be performed. Vide ante, pag. xxiii. in not.

Staatsbibliothek
MÜNCHEN

A GENERAL HISTORY OF THE SCIENCE and PRACTICE OF MUSIC.

BOOK I. CHAP. I.

THERE is ſcarce any conſideration that affords greater occaſion to lament the inevitable viciſſitude of things, than the obſcurity in which it involves, not only the hiſtory and real characters, but even the diſcoveries of men. When we conſider the various purſuits of mankind, that ſome reſpect merely the intereſt of individuals, and terminate with themſelves, while others have for their object the inveſtigation of truth, the attainment and communication of knowledge, or the improvement of uſeful arts; we applaud the latter, and reckon upon the advantages that poſterity muſt derive from them: but this it ſeems is in ſome degree a fallacious hope; and, notwithſtanding the preſent improved ſtate of learning in the world, we have reaſon to deplore the want of what is loſt to us, at the ſame time that we rejoice in that portion of knowledge which we poſſeſs.

Whoever is inclined to try the truth of this obſervation on the ſubject of the preſent work, if he does not ſee cauſe to acquieſce in it, will at leaſt be under great difficulties to ſatisfy himſelf how it comes to paſs, that ſeeing what miraculous effects have been aſcribed to the muſic of the ancients, we know ſo little concerning it, as not only to be ignorant of the uſe and application of moſt of their inſtruments, but even in a great meaſure of their ſyſtem itſelf.

To ſay that in the general deluge of learning, when the irruptions of barbarous nations into civilized countries, the ſeats and nurſeries of ſcience, became frequent, muſic, as holding no ſympathy with minds actuated by ambition and the luſt of empire, was neceſſarily overwhelmed, is not ſolving the difficulty; for though barbariſm might check, as it did, the growth of this as well as other arts, the utter extirpation of it ſeems to have been as much then, as it is now, impoſſible. That conqueſt did not produce the ſame effect on the other arts is certain; the architecture, the ſculpture, and the poetry of ancient Greece and Rome, though they withdrew for a time, were yet not loſt, but after a retirement of ſome centuries appeared again. But what became of their muſic is ſtill a queſtion: the pyramids, the Pantheon, the Hercules of Glycon, the Grecian Venus, the writings of Homer, of Plato, of Ariſtotle, and other ancients, are ſtill in being; but who ever ſaw, or where are depoſited, the compoſitions of Terpander, Timotheus, or Phrynis? Did the muſic of theſe, and many other men whom we read of, conſiſt of mere Energy, in the extemporary prolation, of ſolitary or accordant ſounds; or had they, in thoſe very early ages, any method of notation, whereby their ideas of ſound, like thoſe of other ſenſible objects, were rendered capable of communication? It is hard to conceive that they had not, when we reflect on the very great antiquity of the invention of letters; and yet before the time of Alypius, who lived A. C. 115, there are no remaining evidences of any ſuch thing.

The writers in that famous controverſy ſet on foot by Sir William Temple, towards the cloſe of the laſt century, about the comparative excellence of the ancient and modern learning, at leaſt thoſe who ſided with the ancients, ſeem not to have been aware of the difficulty they had to encounter, when they undertook, as ſome of them did, to maintain the ſuperiority of the ancient over the modern muſic, a difficulty ariſing not more from the ſuppoſed weight on the other ſide of the argument, than from the want of ſufficient Data on their own. In the compariſon of ancient with modern muſic, it was reaſonable to expect that the advocates for the former ſhould at leaſt have been able to define it; but Sir William Temple, who contends for its ſuperiority, makes no ſcruple to confeſs his utter incapacity to judge about it: 'What, ſays he, are become of the charms of muſic, 'by which men and beaſts, fiſhes, fowls, and ſerpents were ſo fre-

'quently

'quently enchanted, and their very natures changed; by which the 'paſſions of men are raiſed to the greateſt height and violence; and 'then ſo ſuddenly appeaſed, ſo as they might be juſtly ſaid to be 'turned into lions or lambs, into wolves or into harts, by the powers 'and charms of this admirable art? 'Tis agreed of all the learned 'that the ſcience of muſic, ſo admired by the ancients, is wholly loſt 'in the world, and that what we have now is made up of certain 'notes that fell into the fancy or obſervation of a *poor friar* in chant-'ing his mattins: ſo as thoſe two divine excellencies of muſic and 'poetry are grown in a manner to be little more but the one *fiddling*, 'and the other rhyming, and are indeed very worthy the ignorance 'of the friar, and the barbarouſneſs of the Goths that introduced 'them among us *.'

Whatever are the powers and charms of this admirable art, there needs no farther proof than the paſſage above-cited, that the author of it was not very ſuſceptible of them; for either the learned of theſe later times are ſtrangely miſtaken, or thoſe *certain notes*, which he ſpeaks ſo contemptuouſly of, have, under the management of ſkilful artiſts, produced effects not much leſs wonderful than thoſe attributed to the ancient muſic. And it is not to be imagined but that Sir William Temple, in the courſe of a life ſpent among foreigners of the firſt rank, and at a time when Europe abounded with excellent maſters, muſt have heard ſuch muſic, as, had he had any ear to appeal to, would have convinced him that the art had ſtill its charms, and thoſe very potent ones too.

But, not to follow the example of an author, whoſe zeal for a favourite hypotheſis had led him to write on a ſubject he did not underſtand, we will proceed to trace the various progreſs of this art: its progreſs, it is ſaid, for the many accounts of the time of the invention, as well as of the inventors of muſic, leave us in great uncertainty as to its riſe. The authority of poets is not very reſpectable in matters of hiſtory; and there is hardly any other for thoſe common opinions that we owe the invention of muſic to Orpheus, to Amphion, Linus, and many others; unleſs we except that venerable doctor and ſchoolman Thomas Aquinas, who aſſerts, that not muſic alone, but every other ſcience, was underſtood, and that by immediate revela-

* Eſſay on the ancient and modern learning.

tion from above, by the firſt of the human race. However, it may not be amiſs to mention the general opinions as to the invention of muſic, with this remark, that no greater deference is due to many of them than is paid to other fables of the ancient poets and mythologiſts.

There can be no doubt but that vocal muſic is more ancient than inſtrumental, ſince mankind were endowed with voices before the invention of inſtruments; but the great queſtion is, at what time they began to frame a ſyſtem, and this naturally leads to an enquiry into the time of the invention of inſtruments; for if we conſider the evaneſcence of ſound uttered by the human voice, the notion of a ſyſtem without, is at this day not very intelligible.

But previous to any ſuch enquiry, we may very reaſonably be allowed the liberty of conjecture, in which if we indulge ourſelves, we cannot ſuppoſe but that an art ſo ſuited to our natures, and adapted to our organs, as muſic is, muſt be nearly as ancient as thoſe of Agriculture, Navigation, and numberleſs other inventions, which the neceſſities of mankind ſuggeſted, and impelled them to purſue: the deſire of the conveniences, the comforts, the pleaſures of life, is a principle little leſs active than that which leads us to provide for its wants; and perhaps it might be even before they had learned to 'go down to the ſea in ſhips' that men began to 'handle the harp and organ,' which it cannot be ſuppoſed they could do to any delightful purpoſe, without ſome knowledge of thoſe harmonical relations and coincidences of ſound, which are the eſſence of the art. Such a knowledge as this we may eaſily conceive was ſoon attained by even the earlieſt inhabitants of the earth. The voices of animals, the whiſtling of the winds, the fall of waters, the concuſſion of bodies of various kinds, not to mention the melody of birds, as they all contain in them the rudiments of harmony, may eaſily be ſuppoſed to have furniſhed the minds of intelligent creatures with ſuch ideas of ſound, as time, and the accumulated obſervation of ſucceeding ages, could not fail to improve into a ſyſtem *.

* Lucretius ſuppoſes that mankind took their firſt notions of muſic from the ſinging of birds.

At liquidas avium voces imitarier ore
Ante fuit multò, quam lævia carmina cantu
Concelebrare homines poſſent, aureiſque juvare. Lib. V.

And

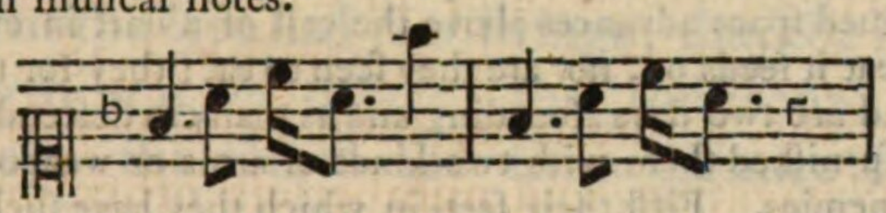
A reaſon has already been given to ſhew that the notion of a muſical ſyſtem does neceſſarily preſuppoſe muſical inſtruments; it

And the ſame poet has in ſome ſort aſcertained the origin of wind inſtruments in the following elegant verſes.

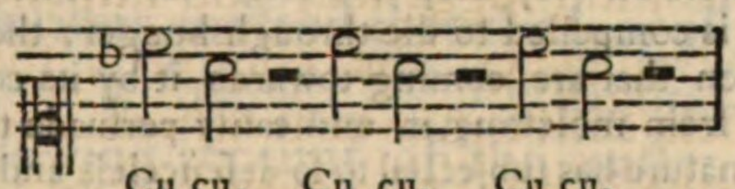
Et zephyri cava per calamorum ſibila primum
Agreſteis docuere cavas inflare cicutas,
Inde minutatim dulceis didicere querelas,
Tibia quas fundit digitis pulſata canentum. Ibid.

Thro' all the woods they heard the charming noiſe
Of chirping birds, and try'd to frame their voice
And imitate. Thus birds inſtructed man,
And taught them ſongs before their art began;
And whilſt ſoft evening gales blew o'er the plains,
And ſhook the ſounding reeds, they taught the ſwains,
And thus the pipe was fram'd and tuneful reed. CREECH.

Part of the natural ſong of the black-bird conſiſts of true diatonic intervals, and is thus to be expreſſed in muſical notes.

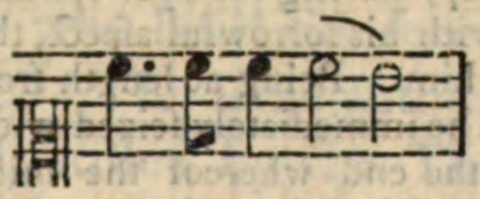


That of the cuckow is well known to be this:

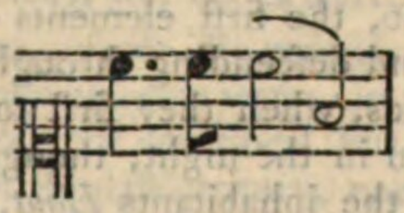


Cu cu, Cu cu, Cu cu.

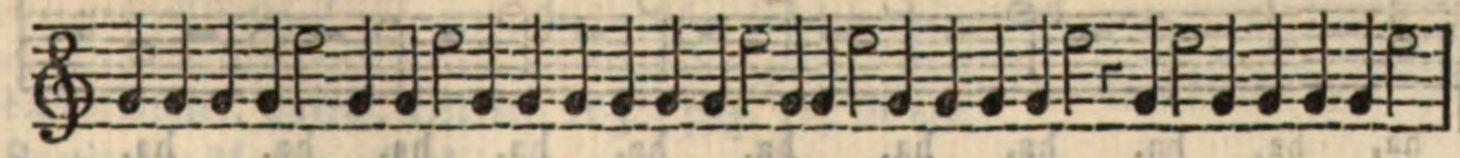
And Kircher, Muſurg. lib. I. cap. xiv. has given the ſongs of other birds, which with great ingenuity and induſtry he had inveſtigated, as namely that of the nightingale, the quail, the parrot, the cock and hen, in the common characters of muſical notation. Though that which he gives of the common dunghill cock ſeems to be erroneous, and is thus to be expreſſed:



And it may be obſerved that between the dunghill and bantam cock there is a difference, for the latter intonates the following ſounds, which conſtitute the interval of a true fifth.



The ſong of the hen at the time of her laying, is thus deſcribed by him:



and clearly appears to be an intonation of a major ſixth.

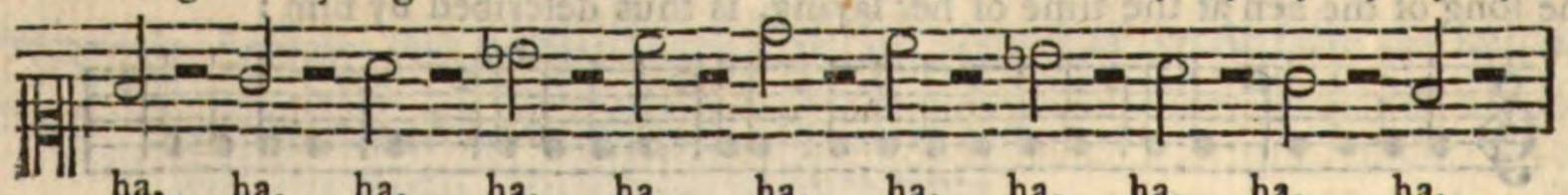
The

therefore becomes neceſſary to trace the invention of ſuch inſtruments as are diſtinguiſhed by the ſimplicity of their conſtruction, and whoſe forms and properties at this diſtance of time are moſt eaſily to be conceived of, and theſe clearly ſeem to be reduced to two, the lyre and the pipe.

The ſame author aſſerts that other animals, and even quadrupeds, articulate different ſounds that have a muſical ratio to each other, as an inſtance whereof he mentions an animal produced in America called the *Pigritia*, or Sloth, of which he gives the following curious account.

'Before I ſpeak of his voice I will give a deſcription of this whole animal, which this very year I received from the mouth of father Johannes Torus, procurator of the province of the new kingdom in America, who had ſome of theſe animals in his poſſeſſion, and made ſeveral trials of their natures and properties. The figure of this animal is uncommon, they call it *Pigritia*, on account of the ſlowneſs of its motions. It is of the ſize of a cat, has an ugly countenance, and claws projecting in the likeneſs of fingers: it has hair on the back part of its head, which covers its neck; it bruſhes the very ground with its fat belly. It never riſes upon its feet, but moves forward ſo ſlowly, that it ſcarce in a continued ſpace advances above the caſt of a dart in even fifteen days. No one knows what meat it feeds on, nor are they ſeen to eat; they for the moſt part keep on the tops of trees, and are two days aſcending and as many in deſcending. Moreover, nature ſeems to have furniſhed them with two kinds of arms or weapons againſt other beaſts and animals their enemies. Firſt their feet, in which they have ſuch ſtrength, that whatſoever animal they lay hold on they keep it ſo faſt, that it is never after able to free itſelf from their nails, but it is compelled to die through hunger: the other is, that this beaſt ſo greatly affects the men that are coming towards it by its countenance, that in pure compaſſion they refrain from moleſting it, and eaſily perſuade themſelves not to be ſolicitous about that which nature has ſubjected to ſo defenceleſs and miſerable a ſtate of body. The above-mentioned father, in order to make a trial of this, procured one of theſe animals to be brought to the college of our ſociety at Carthagena of the new kingdom, and threw a long pole under its feet, which he immediately graſped ſo tenaciouſly, that it would by no means let it go; the animal thus bound by a voluntary ſuſpenſion, was placed between two beams, where he ſtuck thus ſuſpended for forty days together, without either meat, drink, or ſleep, having his eyes continually fixed on thoſe that looked on him, whom he affected ſo with his ſorrowful aſpect, that there was ſcarce any one that was not touched with pity for him. Being at length freed from this long ſuſpenſion, a dog was thrown to him, which he immediately ſeized with his feet, and forcibly detained for the ſpace of four days, at the end whereof the miſerable creature expired, being famiſhed through hunger. This I had from the mouth of the above father.'

They add moreover (to return to the purpoſe) that this beaſt makes no noiſe or cry but in the night, and that with a voice interrupted only by the duration of a ſigh or ſemi-pauſe. It perfectly intonates, as learners do, the firſt elements of muſic, *ut, re, mi, fa, ſol la. la, ſol, fa, mi, re, ut.* aſcending and deſcending through the common intervals of the ſix degrees, inſomuch that the Spaniards, when they firſt took poſſeſſion of theſe coaſts, and perceived ſuch a kind of vociferation in the night, thought they heard men accuſtomed to the rules of muſic. It is called by the inhabitants *Haut*, for no other reaſon than that it repeats through every degree of the interval of a ſixth the ſound *ha, ha, ha, ha, ha, ha*, &c.



The

The lyre, the moſt conſiderable of the two, and the prototype of the *fidicinal* or ſtringed ſpecies, is ſaid to have been invented about the year of the world 2000, by Mercury, who finding on the bank of the river Nile a ſhell-fiſh of the tortoiſe kind, which an inundation of that river had depoſited there, and obſerving that the fleſh was already conſumed, he took up the back ſhell, and hollowing it, applied ſtrings to it *; though concerning the number of ſtrings there is great controverſy, ſome aſſerting it to be only three, and that the ſounds of the two remote were acute and grave, and that of the intermediate one a mean between thoſe two extremes: that Mercury reſembled thoſe three chords to as many ſeaſons of the year, which were all that the Greeks reckoned, namely, Summer, Winter, and Spring, aſſigning the acute to the firſt, the grave to the ſecond, and the mean to the third.

Others aſſert that the lyre had *four* ſtrings; that the interval between the firſt and fourth was an octave; that the ſecond was a fourth † from the firſt, and the fourth the ſame diſtance from the third, and that from the ſecond to the third was a tone ‡.

Another claſs of writers contend that the lyre of Mercury had *ſeven* ſtrings: Nicomachus, a follower of Pythagoras, and the chief of them, gives the following account of the matter: 'The lyre made 'of the ſhell was invented by Mercury, and the knowledge of it, as 'it was conſtructed by him of ſeven ſtrings was tranſmitted to Or-'pheus; Orpheus taught the uſe of it to Thamyris and Linus, the 'latter of whom taught it to Hercules, who communicated it to 'Amphion the Theban, who built the ſeven gates of Thebes to the 'ſeven ſtrings of the lyre.' The ſame author proceeds to relate 'that 'Orpheus was afterwards killed by the Thracian women, and that 'they are reported to have caſt his lyre into the ſea, which was after-

* Nicomachi Harmonices Manualis, lib. II. ex verſ. Meibom. p. 29.

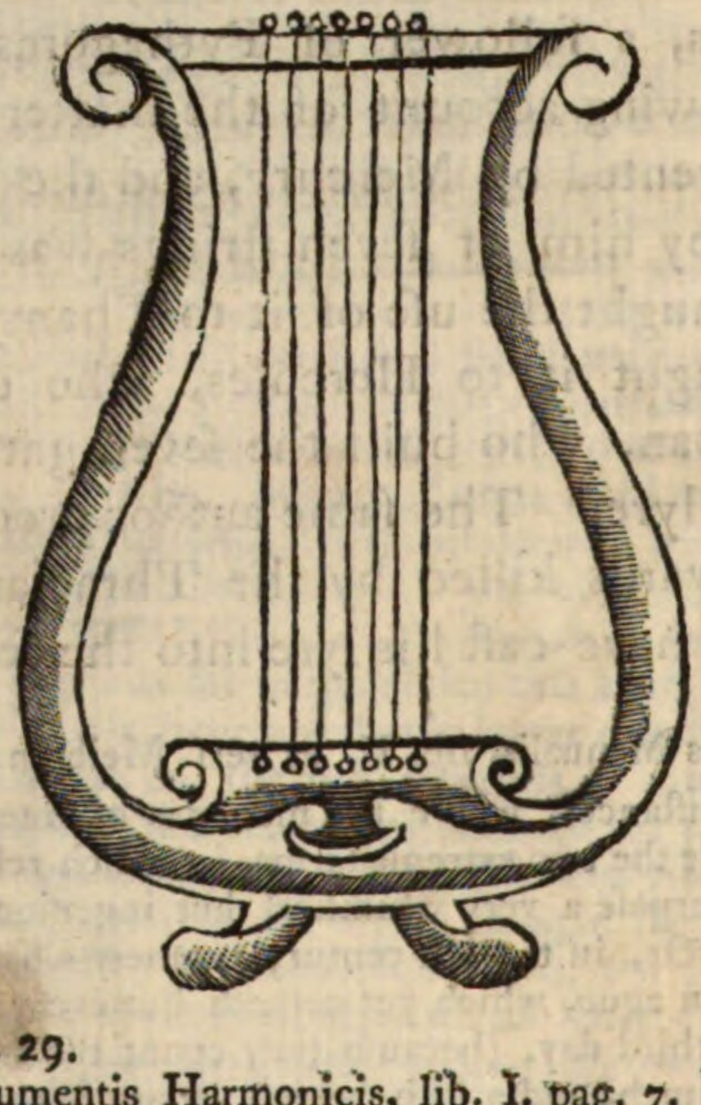
† In this and all other inſtances, where the meaſures of intervals are aſſigned, it is to be obſerved that they include the two extreme terms, in which reſpect the phraſes of muſic and phyſic agree; to this purpoſe a very whimſical but ingenious and learned writer on muſic and many other ſubjects, in the laſt century, namely Charles Butler, thus ſpeaks: 'As phyſicians ſay a tertian ague, which yet cometh but every ſecond day, and a quar-'tan, whoſe acceſs is every third day, (becauſe they count the firſt fit-day for one) ſo do 'muſicians call a third, a fourth, and a fifth (which yet are but two, three, and four notes 'from the ground) becauſe they account the ground itſelf for one.' Principles of Muſic, by Charles Butler, quarto, London 1636, pag. 52, in not.

‡ Boetius de Muſica, lib. I. pag. 20.

'wards

'wards thrown up at Antiſſa, a city of Leſbos; that certain fiſhers 'finding it, they brought it to Terpander, who carried it to Egypt, ex- 'quiſitely improved, and ſhewing it to the Egyptian prieſts, aſſumed 'to himſelf the honour of its invention *.'

And with reſpect to the form of the ancient lyre, as little agreement is to be found among authors as about the number of ſtrings; the beſt evidences concerning it are the repreſentations of that inſtrument in the hands of ancient ſtatues of Apollo, Orpheus, and others, on baſs reliefs, antique marbles, medals and gems †; but of theſe it muſt be confeſſed that they do not all favour the ſuppoſition that it was originally formed of a tortoiſe ſhell; though on the other hand it may be ſaid, that as none of thoſe monuments can pretend to ſo high an antiquity as the times to which we aſſign the invention of the lyre, they are to be conſidered as exhibitions of that inſtrument in a ſtate of improvement, and therefore are no evidence of its original form. Galilei mentions a ſtatue of Orpheus in the Palazzo de Medici, made by the Cavalier Bandinelli, in the left hand whereof is a lyre of this figure ‡.

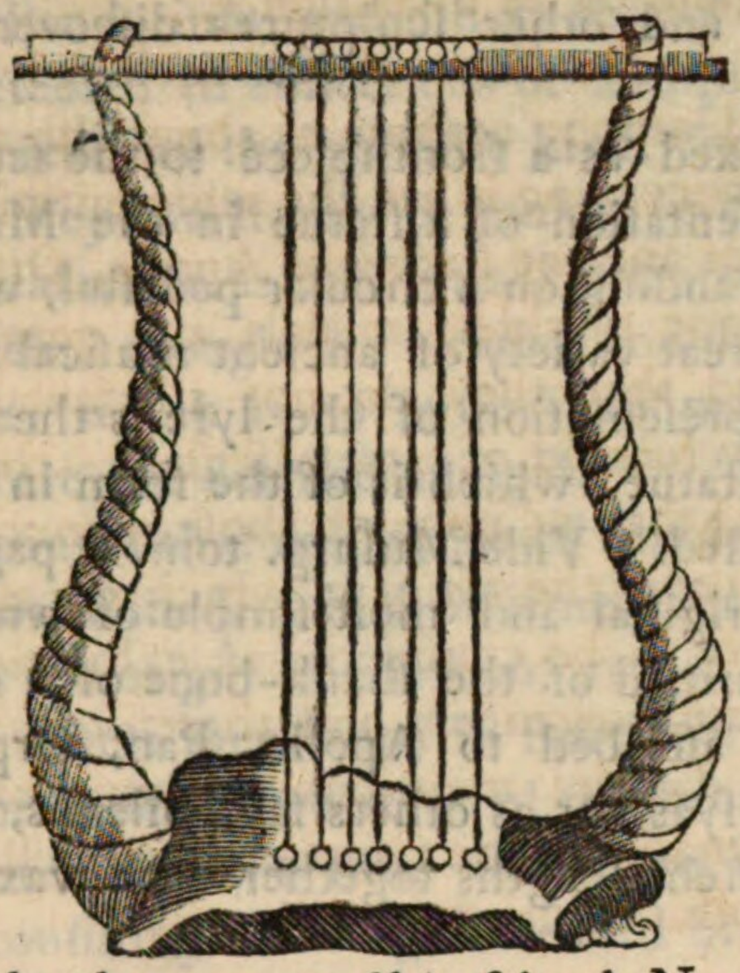


* Nicom. lib. II. pag. 29.

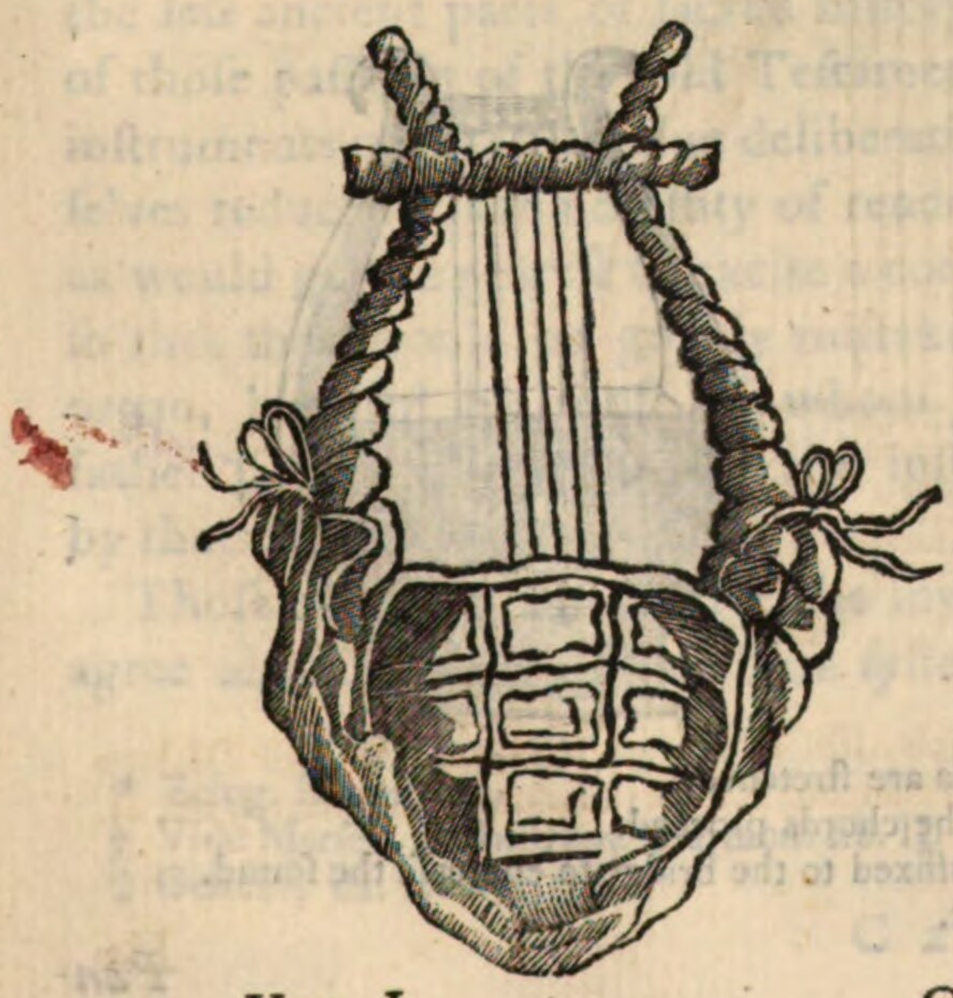
† Merſennus de Inſtrumentis Harmonicis, lib. I. pag. 7. Vincentio Galilei Dialogo della Muſica Antica e Moderna, pag. 125. Athanaſius Kircher Muſurgia univerſalis, lib. II. cap. vi. § iii.

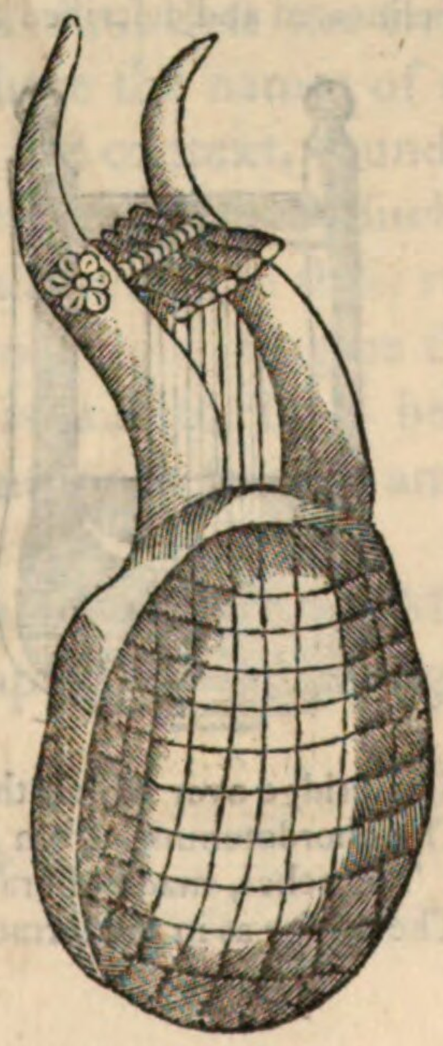
‡ Galilei, 129.

He alſo cites a paſſage from Philoſtratus, importing that the lyre was made of the horns of a goat, from which Hyginius undertook thus to delineate it.



Merſennus ſays that by means of his friends Naudè and Gaffarel, he had obtained from Rome, and other parts of Italy, drawings of ſundry ancient inſtruments from coins and marbles; among many which he has given, are theſe of the lyre: the firſt is apparently a part of a tortoiſe-ſhell, the other he ſays is part of the head with the horns of a bull.



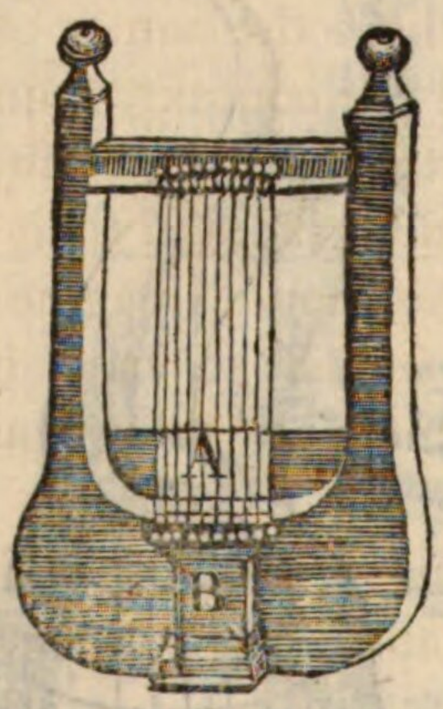


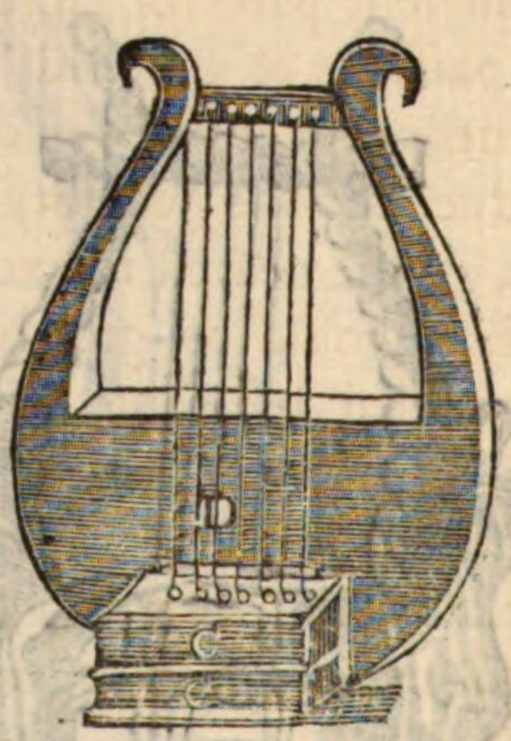
The above-cited authors mention alſo a *Plectrum*, of about a ſpan in length, made of the lower joint of a goat's leg; the uſe whereof was to touch the ſtrings of the lyre, as appeared to Galilei by ſeveral ancient baſs-reliefs and other ſculptures diſcovered at Rome in his time.

Kircher has prefixed as a frontiſpiece to the ſecond tome of the Muſurgia, a repreſentation of a ſtatue in the Matthei garden near Rome, of Apollo ſtanding on a circular pedeſtal, whereon are carved in baſſo relievo a great variety of ancient muſical inſtruments. But the moſt perfect repreſentation of the lyre is the inſtrument in the hand of the above ſtatue, which is of the form in which the lyre is moſt uſually delineated. Vide Muſurg. tom. I. pag. 536 *.

The Pipe, the original and moſt ſimple of wind inſtruments, is ſaid to have been formed of the ſhank-bone of a crane, and the invention thereof is aſcribed to Apollo, Pan, Orpheus, Linus, and many others. Marſyas, or as others ſay, Silenus, was the firſt that joined pipes of different lengths together with wax; but Virgil ſays,

* Iſaac Voſſius, a bigotted admirer of the ancients, de Poemat. cant. et virib. Rythm. pag. 97, contends that hardly any of theſe remaining monuments of antiquity are in ſuch a ſtate as to warrant any opinion touching the form of the ancient lyre. He ſpeaks indeed of two ſtatues of Apollo in the garden of his Britannic majeſty at London, in the year 1673, (probably the Privy Garden behind the then palace of Whitehall) each holding a lyre; and as neither of theſe inſtruments was then in the leaſt mutilated, he conſiders them as true and perfect repreſentations of the ancient cythara or lyre, in two forms, and has thus delineated and deſcribed them.





A The bridge over which the chords are ſtretched.
B The chordotonum, from which the chords proceed.
C C The echei, made of braſs, and affixed to the bridge to encreaſe the ſound.
D The bridge as in the former figure.

Pan

Pan primos calamos cera conjungere plures
Inſtituit. *

forming thereby an inſtrument, to which Iſidore, biſhop of Seville gives the name of Pandorium, and others that of Syringa, and which is frequently repreſented in collections of antiquities †.

As to the inſtruments of the pulſatile kind, ſuch as are the Drum, and many others, they can hardly be ranked in the number of muſical inſtruments; inaſmuch as the ſounds they produce are not reducible to any ſyſtem, though the meaſure and duration or ſucceſſion of thoſe ſounds is; which is no more than may be ſaid of many ſounds, which yet are not deemed muſical.

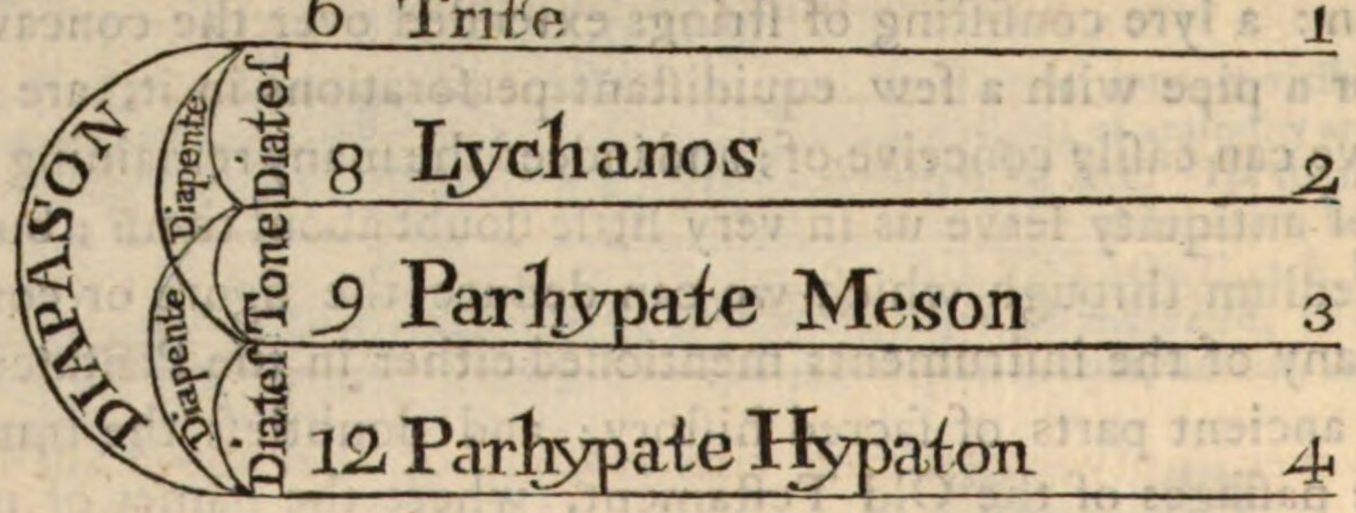
Such are the accounts that are left us of the invention of the inſtruments above-mentioned, which it is neceſſary to make the baſis of an enquiry into the origin of a ſyſtem, rather than the Harp, the Organ, and many others mentioned in ſacred writ, whoſe invention was earlier than the times above referred to, becauſe their reſpective forms are known even at this time of day to a tolerable degree of preciſion: a lyre conſiſting of ſtrings extended over the concave of a ſhell, or a pipe with a few equidiſtant perforations in it, are inſtruments we can eaſily conceive of; and indeed the many remaining monuments of antiquity leave us in very little doubt about them; but there is no medium through which we can deduce the figure or conſtruction of any of the inſtruments mentioned either in the Pentateuch, or the leſs ancient parts of ſacred hiſtory; and doubtleſs the tranſlators of thoſe paſſages of the Old Teſtament, where the names of muſical inſtruments occur, after due deliberation on the context, found themſelves reduced to the neceſſity of rendering thoſe names by ſuch terms as would go the neareſt to excite a correſpondent idea in their readers: ſo that they would be groſsly miſtaken who ſhould imagine that the organ, handled by thoſe of whom Jubal is ſaid to have been the father ‡, any way reſembled the inſtrument now known among us by that name.

Thoſe accounts which give the invention of the lyre to Mercury, agree alſo in aſcribing to him a ſyſtem adapted to it; though with

* Eclog. II. ver. 32.
† Vide Merſen. de Inſtrum. Harmon. lib. II. pag. 73.
‡ Geneſis, ch. iv. ver. 21.

reſpect to the nature of that ſyſtem, as alſo to the number of ſtrings of which the lyre conſiſted, there is a great diverſity of opinions; and indeed the ſettling the firſt of theſe queſtions would go near to determine the other. Boetius inclines to the opinion that the lyre of Mercury had only four ſtrings; and adds, that the firſt and the fourth made a diapaſon; that the middle diſtance was a tone, and the extremes a diapente *.

Zarlino, following Boetius, adopts his notion of a tetrachord, and is more particular in the explanation of it †; his words are as follow: 'From the firſt ſtring to the ſecond was a diateſſe-'ron or a fourth; from the ſecond to the third was a tone; and 'from the third to the fourth was a diateſſeron; ſo that the firſt with 'the ſecond, and the third with the fourth, contained a diateſſeron; 'the firſt with the third, and the ſecond with the fourth, a dia-'pente or fifth.' Admitting all which, it is clear that the firſt and fourth ſtrings muſt have conſtituted a diapaſon.



It is to be obſerved that the above diagram is uſed by Boetius, and is adopted by Zarlino, Kircher, and many other writers ‡; but that though the application of the letters C. G. F. C. in one edition of Boetius, is plainly intended to ſhew that the ſtrings immediately below them were ſuppoſed to correſpond with thoſe notes in our ſyſtem, yet the authors who follow Boetius have not ventured to make uſe of them; and indeed there is great reaſon to reject them; for in the earlier editions of Boetius de Muſica, the diagram above given is without letters. It ſeems as if

* De Muſica, lib. I. cap. 20. Bontempi, 48.
† Iſtitutioni Harmoniche, pag. 72.
‡ Vide Boetius de Muſica, lib. I. cap. 20. Kircher, Muſurgia univerſalis, tom. I. lib. ii. cap. 6. Zarlino Iſtit. Harmon. pag. 73, 75.

Glareanus,

Glareanus, who aſſiſted in the publication of the Baſil edition of that author, in 1570, thought he ſhould make the ſyſtem more intelligible by the addition of thoſe letters; but there is no ground to ſuppoſe that the Mercurian lyre, admitting it to conſiſt of four ſtrings, was ſo conſtructed.

Bontempi, an author of great credit, relying on Nicomachus ſuſpects the relation of Boetius, as to the number of the ſtrings of the Mercurian lyre; and farther doubts whether the ſyſtem of a diapaſon, as it is above made out, did really belong to it or not; and indeed his ſuſpicions ſeem to be well grounded; for, ſpeaking of this ſyſtem, he ſays that none of the Greek writers ſay any thing about it, and that the notion of its formation ſeems to be founded on a diſcovery made by Pythagoras, who lived about 500 years before Chriſt, of which a very particular relation will be given in its proper place; and farther to ſhew how queſtionable this notion is, he quotes the very words of Nicomachus before-cited, concluding with a modeſt interpoſition of his own opinion, which is that the lyre of Mercury had *three* ſtrings only, and was thus conſtituted *.

G

Interval of a tone.

F

Interval of a hemitone.

E

However, notwithſtanding the reaſons of the above author, the received opinion ſeems to have been that the lyre conſiſted of four ſtrings, tuned to certain concordant intervals, which intervals were undoubtedly at firſt adjuſted by the ear; but nevertheleſs had their foundation in principles which the inventor was not aware of, though what that tuning was, is another ſubject of controverſy. Succeeding muſicians are ſaid to have given a name to each of theſe four ſtrings, which names, though they are not expreſſive of the intervals, are to be adopted in our enquiry after a ſyſtem: to the firſt or moſt grave was given the name of Hypate, or principal; the ſecond was called Parhypate, viz. next to Hypate; the third was called Paranete, and the fourth Nete, which ſignifies loweſt; it is obſervable here, that

* Hiſt. Muſic. pag. 49.

it ſeems to have been the practice of the ancients to give the more grave tones the uppermoſt place in the ſcale, contrary to the moderns, by whom we are to underſtand all who ſucceeded the grand reformation of muſic by Guido, in the eleventh century, of which there will be abundant occaſion to ſpeak hereafter.

The ſeveral names above-mentioned exhibit the lyre in a very ſimple ſtate, viz. as conſiſting of four ſtrings, having names from whence neither terms nor intervals can be inferred.

HYPATE
PARHYPATE
PARANETE
NETE

Thoſe who ſpeak of the lyre in the manner above-mentioned, ſeem to imagine that its compaſs included two diateſſerons or fourths, which being conjoined, extended to a ſeventh, differing from that of Boetius, in that his diateſſerons, being ſeparated by a tone, took in the extent of an octave, and thereby formed a diapaſon. They proceed to relate farther, that Chorebus, the ſon of Atys king of Lydia, added a fifth ſtring, which he placed between Parhypate and Paranete, calling it, from its middle ſituation, Meſe, that Hyagnis, a Phrygian, added a ſixth, which he placed between Meſe and Parhypate; this ſtring he called Lychanos, a word ſignifying the *indicial* finger, viz. that on the left hand, next the thumb: and laſtly ſay theſe writers, Terpander added a ſeventh ſtring, which he placed between Meſe and Paranete, and called Parameſe: the lyre, thus improved, included a ſeptenary, or ſyſtem of ſeven terms, diſpoſed in the following order.

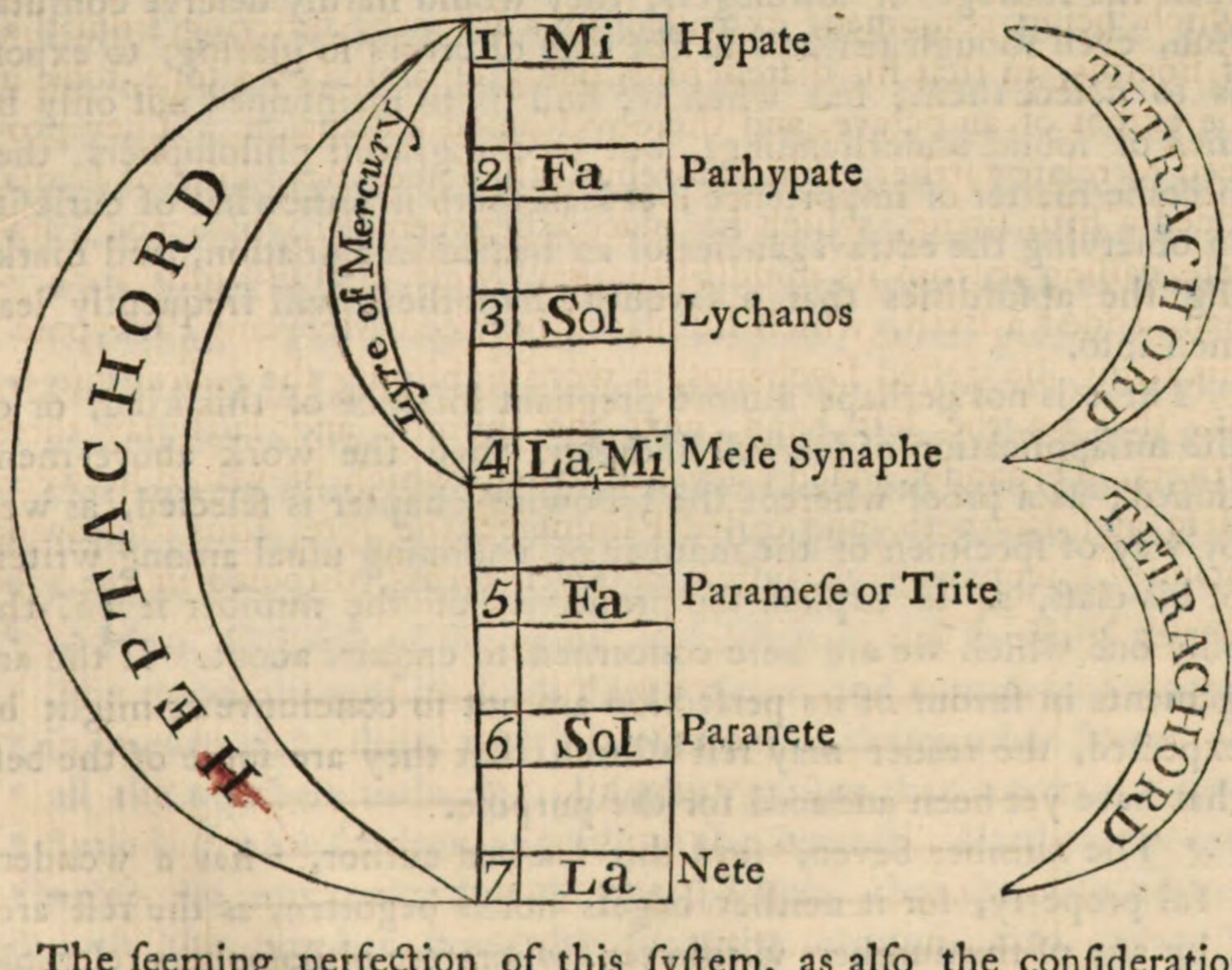
HYPATE
PARHYPATE
LYCHANOS
M E S E
PARAMESE
PARANETE
N E T E

CHAP.

CHAP. II.

THE ſyſtem above exhibited was the Heptachord Synemmenon of the Greeks; it conſiſted of two tetrachords or fourths, conjoined, that is to ſay, the middle term was the end of the one, and the beginning of the other; and as the laſt ſtring was added by Terpander, the ſyſtem was diſtinguiſhed by his name, and conſidered as the ſecond ſtate of the lyre.

Here then we may diſcern the foundation of a ſyſtem, viz. a ſucceſſion of ſeven ſounds, including two tetrachords, conjoined, by having the Meſe or middle term common to both, thus repreſented by Glareanus in his edition of Boetius, lib. i. cap. 20.



The ſeeming perfection of this ſyſtem, as alſo the conſideration that in muſical progreſſion every eighth ſound is but the replicate of its uniſon, has ſerved to confirm an opinion that there is ſomewhat myſterious in the number ſeven: to ſay the truth, for different reaſons an

an equal degree of perfection has been aſcribed to almoſt every other of the digits: the number four was greatly reverenced by Pythagoras and his diſciples, as that of three is at this day by many Chriſtians. Seven and nine multiplied into themſelves make ſixty-three commonly eſteemed the grand climacteric of our lives; the ground of ſuperſtitious fears in perſons of middle age, and the ſubject of much learned diſquiſition: and there is now extant a treatiſe in folio, intituled, *Myſticæ numerorum ſignificationis*, written by one Peter Bongus, and publiſhed at Bergamo, in the year 1585; the ſole end whereof is to unfold the myſteries, and explain the properties of certain numbers; and whoever has the curioſity to ſearch after ſo inſignificant a work, will find that in the judgment of its author this of Seven is intituled to a kind of pre-eminence over almoſt every other number.

Had theſe opinions of numerical myſtery no better a foundation than the ſuffrage of aſtrologers, they would hardly deſerve confutation, even though perhaps in the caſe of errors ſo glaring, to expoſe is to detect them; but when we find them maintained not only by men of ſound underſtandings, but by the graveſt philoſophers, they become matter of importance; at leaſt there is ſomewhat of curioſity in obſerving the extravagancies of an heated imagination, and marking the abſurdities that a favourite hypotheſis will frequently lead men into.

There is not perhaps a more pregnant inſtance of this kind, or of the miſapplication of learned induſtry, than the work above-mentioned; as a proof whereof the following chapter is ſelected, as well by way of ſpecimen of the manner of reaſoning uſual among writers of his claſs, as to explain the properties of the number ſeven, the only one which we are here concerned to enquire about. If the arguments in favour of its perfection are not ſo concluſive as might be expected, the reader may reſt aſſured that they are ſome of the beſt that have yet been adduced for the purpoſe.

'The number Seven,' ſays this learned author, 'has a wonder-
'ful property, for it neither begets nor is begotten, as the reſt are,
'by any of the numbers within ten, wherefore philoſophers reſemble
'it to the ruler or governor of all things, who neither moves nor is
'moved. Philolaus the Pythagorean, no ignoble author, teſtifies
'thus, and writes that the eternal God is permanent, void of mo-
'tion, ſimilar to himſelf, and different from others; and Boetius has

'a paſſage much to the ſame purpoſe. The idea of virginity had 'ſuch a relation to the number Seven, that it was alſo named Pallas; 'and the Pythagoreans, initiated in her rites, compare the virgin 'Minerva to that number, ſeeing ſhe was not born, but ſprung from 'the head of Jupiter. God reſted on the Seventh day, wherefore it is 'named Sabbath, a word ſignifying reſt. The Seventh petition of 'the Lord's Prayer is, deliver us from evil; becauſe the number 'Seven denotes reſt, and all evil being removed from man, he reſts 'in good; and farther, the ſeventh day or ſabbath repreſents death, 'or the reſt of the ſoul from worldly labours. In Seven days after 'Noah entered the ark the flood began: in the Apocalypſe Seven 'trumpets are mentioned: Job ſpeaks of the viſitation of ſix tribu-'lations, which ſix ſucceeding days brought on him, but on the 'Seventh no harm could touch the juſt: God bleſſed only the 'Seventh day, wherefore the number Seven is attributed to the 'Holy Ghoſt, without whom there is no bleſſing. This St. John 'proves, when in the Apocalypſe he calls the Seven horns and the 'Seven eyes the Seven ſpirits of God. The fever left the ſon of Re-'gulas, according to St. John, at the Seventh hour. Eliſha breathed 'Seven times on the dead man. Chriſt after his reſurrection feaſted 'with Seven diſciples; and Seven brothers were ſent to baptize 'Cornelius. The Seven hairs of Sampſon; Seven golden candle-'ſticks: and in Leviticus command was given to ſprinkle the blood 'and oil Seven times. The Seven ſtars in the bear; the Seven prin-'cipal angels who rule the world under God, and have charge of the 'Seven planets, as namely, Horophiel the ſpirit of Saturn, Anael the 'ſpirit of Venus, Zachariel of Jupiter, Raphael of Mercury, Samael 'of Mars, Gabriel of the moon, and Michael the ſpirit of the ſun. 'The moon changes its form Seven times, and completes its courſe 'in twenty-eight days, which is the ſum of the number Seven, and 'all the numbers under it. Joſephus writes that a certain river in 'Syria is dry for ſix days, and full on the Seventh. Farther, the great 'artiſt did not only dignify the heavens, but he alſo adorned 'with the number Seven his favourite creature man, who has 'ſeven inward parts, or bowels, ſtomach, heart, lungs, milt, liver, 'reins, and bladder; and ſeven exterior, as head, back, belly, 'two hands, and two feet. There are Seven objects of ſight, as 'body, diſtance, figure, magnitude, colour, motion, and reſt: and

'Seven ſpecies of colour, taking in the two extremes of white and 'black, viz. yellow, ſky-blue, green, purple, and red. No one 'can without eating live after the Seventh day. Phyſicians reckon 'ten times Seven years to be the period of human life, which Hippo-'crates divides into Seven ſtages. The ancient lyre, uſed both by 'Orpheus and Amphion, had only Seven chords, anſwering, as it is 'ſaid, to the Seven gates of Thebes. Every Seventh daughter, no 'ſon coming between, hath, by virtue of the number Seven as I 'imagine, a great power in eaſing the pains of child-birth: and 'every Seventh ſon, no daughter coming between, has the power of 'curing the ſcurvy and leproſy by the bare touch; ſo that diſeaſes, 'incurable by phyſicians, are curable by the virtue contained in the 'number Seven. A right-angled triangle is conſtituted of the ſides three, 'four, five, but three and four contain the right angle, which is perfec-'tion itſelf, and therefore their ſum ſeven, muſt as a number be moſt 'perfect. Every active body has three dimenſions, length, breadth, 'and thickneſs, and theſe have four extremes, point, line, ſurface, 'and ſolid, and theſe together make up the number Seven.'

By ſuch arguments as theſe do many of the muſical writers endeavour to excite a myſterious reverence for that number which is confeſſedly the limits of a ſyſtem, as far as it goes, perfect in its kind; in anſwer to which it may be ſaid, that this ſuperſtitious regard for certain numbers ſeems to be very deſervedly ranked among thoſe vulgar and common errors, which it is profeſſedly the end of a very learned and juſtly celebrated publication of the laſt century to refute, wherein it is ſaid, that 'with reſpect to any extraordinary power or ſecret virtue 'attending the number ſixty-three, or any other, a ſerious reader will 'hardly find any thing that may convince his judgment, or any far-'ther perſuade than the lenity of his belief, or pre-judgment of rea-'ſon inclineth *.'

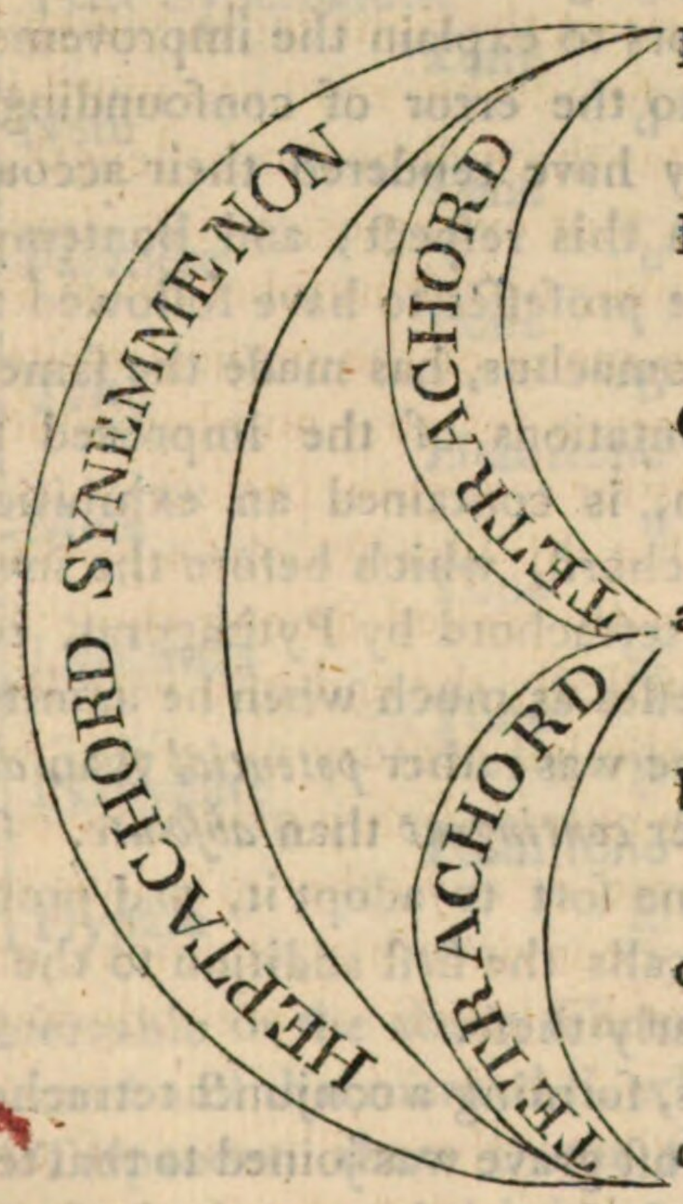
But to return from this digreſſion: the rudiments of the preſent greater muſical ſyſtem are diſcernible in that of a ſeptenary, adjuſted, as we are told, by Terpander, in the form above declared; and as to the intervals of which it was conſtituted, modern authors have not ſcrupled to aſſert that they were preciſely the ſame as thoſe contained in a double diateſſeron, according to the preſent practice; the con-

* Sir Thomas Browne's Enquiry into Vulgar Errors, 173.

ſequence

ſequence whereof muſt be, that each of the two tetrachords, of which the above ſyſtem is ſuppoſed to have been formed, conſiſted of a hemitone and two tones; which will be readily conceived by ſuch as reflect, that in the paſſage either upwards or downwards from any given note to its fourth, in that progreſſion which is moſt grateful to the ear, thoſe intervals muſt neceſſarily occur. Perſuaded of the truth of this ſuppoſition, ſucceeding muſicians have ventured to apply the modern method of notation to the terms of the ancients, and are pretty well agreed that the term Meſe anſwered to a, or LA, in our ſcale. Taking this for granted, the ſyſtem of Terpander will appear in the following form.

SYSTEM of TERPANDER.



E Hypate
Hemitone
F Parhypate
Tone
G Lychanos
Tone
a Meſe
Hemitone
b Parameſe
Tone
c Paranete
Tone
d Nete

But here it is neceſſary to obſerve, that though, as has been ſaid, it was the practice with the ancients to give the grave tones the uppermoſt, and the more acute the lowermoſt place in their ſcale *, which they might very properly do, if, as there is the greateſt reaſon

* Vincentio Galilei, Dialog. della Muſica, pag. 113. Franciſcus Salinas de Muſica, lib. iii. cap. 4.

to believe, their muſic was ſolitary, and they were ſtrangers to the art of combining ſounds in conſonance. Yet the moderns, immediately on the making that moſt important diſcovery, found it neceſſary to differ from them, and accordingly we now place the grave tones at the bottom, and the acute at the top of our ſcale *; the conſequence of this diverſity has been, that whenever any of the modern authors have taken occaſion to exhibit the whole or any part of the ancient Greek ſcale, they have done it in their own way, placing Hypate at the bottom of the diagram; and this will be the method we ſhall obſerve for the future.

Great confuſion has ariſen among the writers on muſic, in reſpect to the order of the ſeveral additions to the ſyſtem of Terpander. That it was perfected by Pythagoras will be related in due time; but the eagerneſs of moſt authors to explain the improvements made by him, has betrayed them into the error of confounding the two ſyſtems together, whereby they have rendered their accounts unintelligible. Boetius has erred in this reſpect; and Bontempi, a modern Italian, notwithſtanding he profeſſes to have followed the Greek writers, more particularly Nicomachus, has made the ſame miſtake; for in every one of the repreſentations of the improved ſyſtem of Terpander which he has given, is contained an exhibition of the Synemmenon or conjunct tetrachord, which before the invention of the Diezeugmenon or disjunct tetrachord by Pythagoras, could have no exiſtence. He indeed confeſſes as much when he admits that the diſtinction imported by its name was rather *potential* than *actual*; or, as we perhaps ſhould ſay, rather *contingent* than *abſolute*. To refute this error it is neceſſary in ſome ſort to adopt it, and proceed after Bontempi to deſcribe what he calls the firſt addition to the ſyſtem of Terpander. His words are nearly theſe.

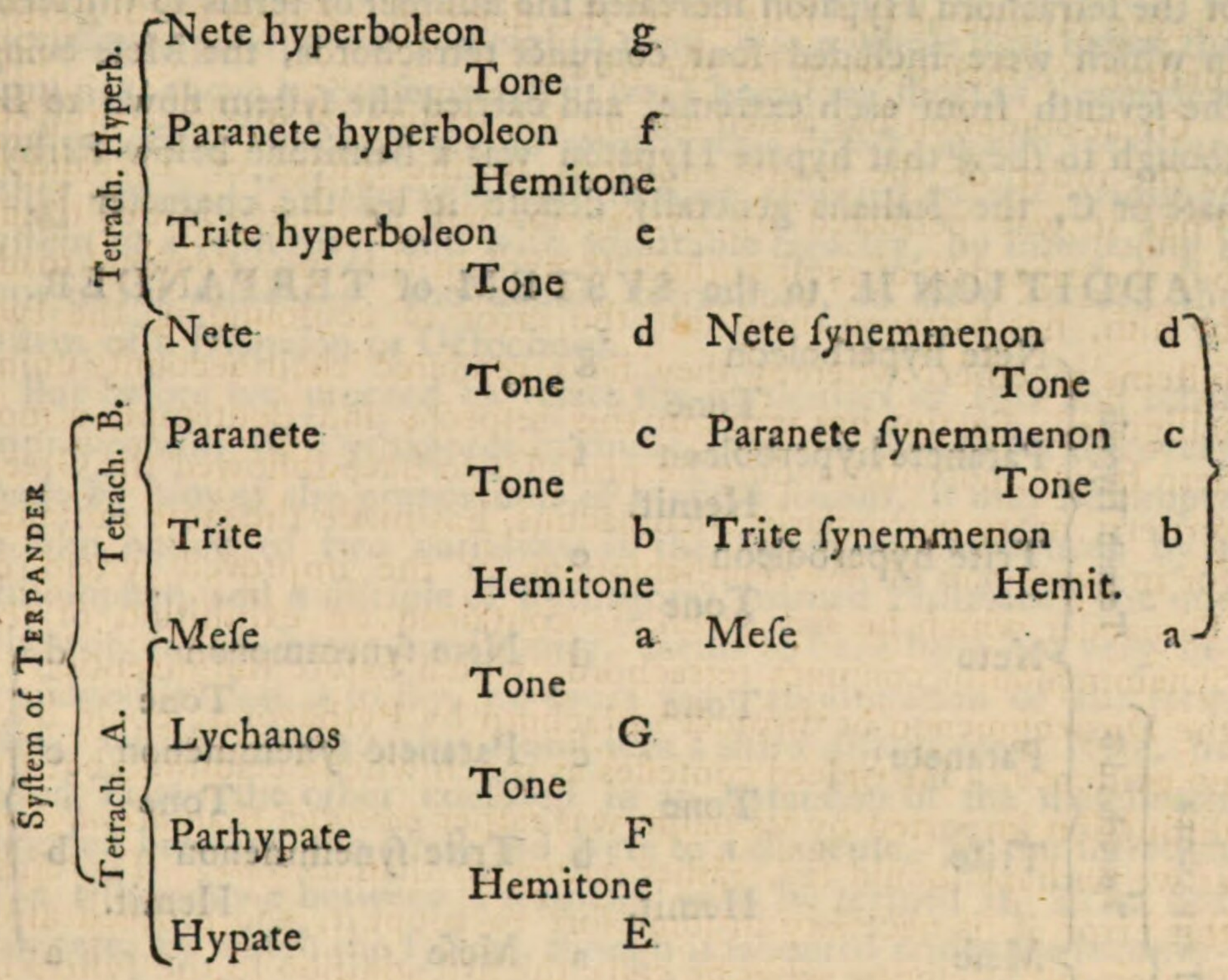
'To the lyre of ſeven ſtrings, forming a conjunct tetrachord, were 'added two tetrachords; the moſt grave was joined to that tetrachord, 'which for its graveſt, or, to uſe the modern method of poſition, its 'loweſt ſound, had Hypate, and the moſt acute tetrachord was 'joined to that which for its moſt acute ſound had Nete: the acuter 'of theſe two additional tetrachords, from its ſituation named hyperboleon, proceeded from Nete by three other terms, viz. Trite, Paranete, and Nete, to each whereof was given the epithet Hyperbo-

* Bontemp. 51, 52.

'leon,

'leon, to diſtinguiſh them from the ſounds denoted by the ſame 'names in the primitive ſeptenary. The other of the additional 'tetrachords, which began from Meſe, was called Synemmenon or 'conjunct, and proceeded likewiſe by the ſame terms of Trite, Para-'nete, and Nete; and each of theſe had, for the reaſon juſt given, 'the epithet of Synemmenon, as in the following figure appears.'

ADDITION I. to the SYSTEM of TERPANDER.



It is obſervable in the above ſcheme, that between the Synemmenon tetrachord and that marked B, which was originally a part of the ſyſtem of Terpander, there is not the leaſt difference: the interval of a hemitone between a and b being common to both; of what uſe then this auxiliary tetrachord was, or how it became neceſſary to diſtinguiſh it by the epithet Synemmenon or conjoined, from that which as yet had never been disjoined, is hard to conceive; the only addition therefore that we conſider is that of the Hyperboleon tetrachord, which increaſed the number of terms to ten, as above is ſhewn: however, after all, as the lyre thus limited to the compaſs of a muſical tenth, reaching from E to g, was not commenſurate in general

general to the human voice, a farther extenſion of it was found neceſſary; and another tetrachord was added to this, which began at Hypate in the former ſyſtem, and proceeded by a repetition of the ſame terms as that did, with the addition of hypaton. This addition begat alſo a diſtinction in the terms of the tetrachord, to which it had been joined; which, to ſhew their relation to the Meſe, had each of them the adjunct of meſon, and the tetrachord to which they belonged was thence called the tetrachord meſon. This laſt addition of the tetrachord Hypaton increaſed the number of terms to thirteen, in which were included four conjunct tetrachords, the Meſe being the ſeventh from each extreme, and carried the ſyſtem down to B; though to ſhew that hypate Hypaton was a hemitone below Parhypate or C, the Italians generally denote it by the character ♭.

ADDITION II. to the SYSTEM of TERPANDER.

System of Terpander.

Tetrach. Hyperb.

Nete hyperboleon g
Tone
Paranete hyperboleon f
Hemit.
Trite hyperboleon e
Tone

Tetrachord B

Nete d — Nete ſynemmenon d
Tone
Paranete c — Paranete ſynemmenon c
Tone
Trite b — Trite ſynemmenon b
Hemit.

Tetrachord A

Meſe a — Meſe a
Tone
Lychanos meſon G
Tone
Parhypate meſon F
Tone
Hypate meſon E
Tone

Tetrach. Hypat.

Lychanos hypaton D
Tone
Parhypate hypaton C
Hemit.
Hypate hypaton ♭

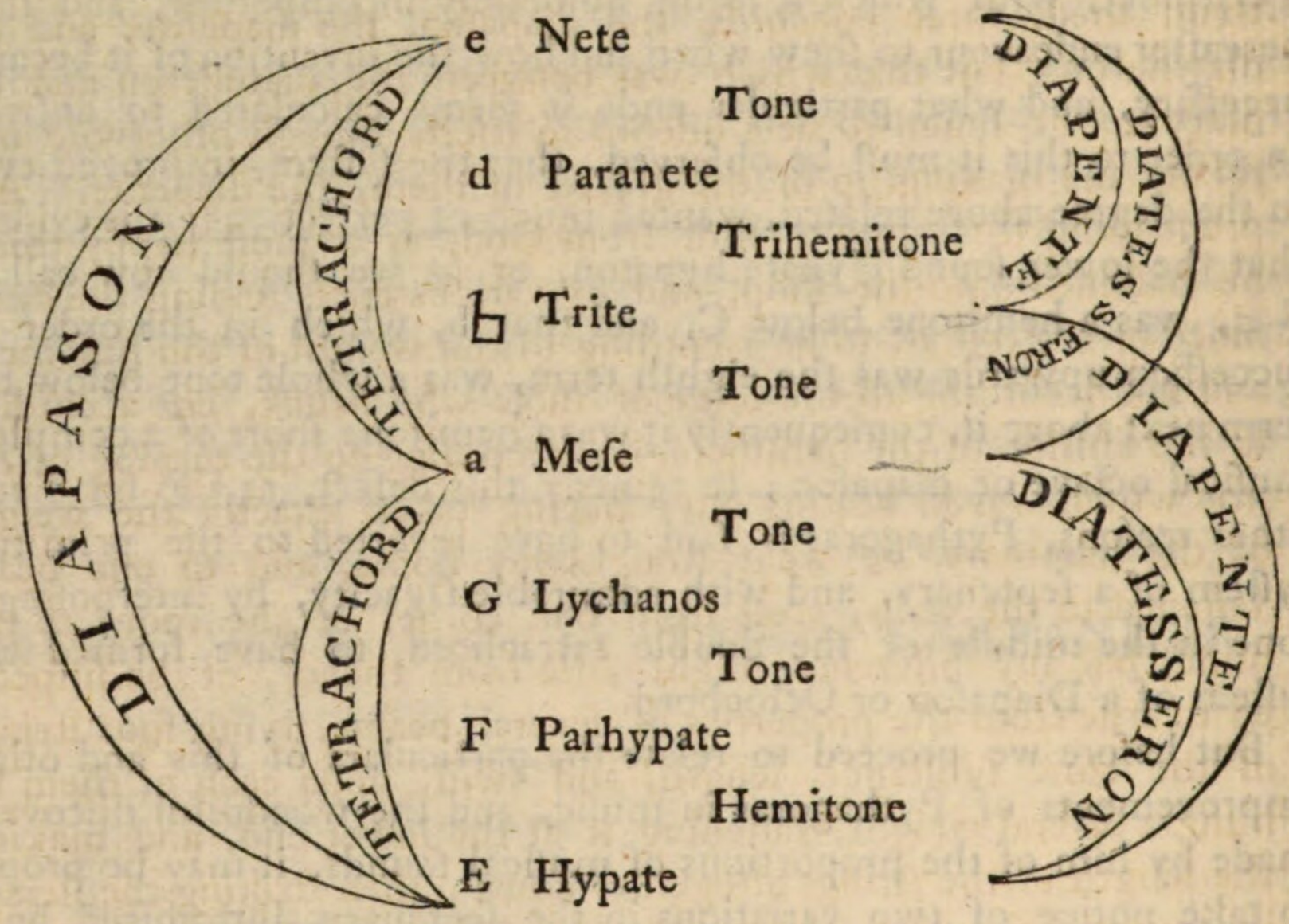
In

In this diagram alſo the Synemmenon Tetrachord is inſerted: we forbear to repeat the reaſons againſt connecting it with the ſyſtem of Terpander, with which it ſeems abſolutely incompatible, and ſhall hereafter endeavour to ſhew when and how the invention of it became neceſſary, and what particular ends it ſeems calculated to anſwer. In order to this it muſt be obſerved, that the ſyſtem, improved even to the degree above related, wanted much of perfection: it is evident that the lower ſound Hypate hypaton, or as we ſhould now call it, B ♮, was a hemitone below C, and that b, which in the order of ſucceſſion upwards was the eighth term, was a whole tone below the term next above it, conſequently it was a hemitone ſhort of a complete muſical octave or diapaſon; to remedy this defect, as alſo for divers other reaſons, Pythagoras is ſaid to have reverted to the primitive ſyſtem of a ſeptenary, and with admirable ſagacity, by interpoſing a tone in the middle of the double tetrachord, to have formed the ſyſtem of a Diapaſon or Octochord.

But before we proceed to relate the particulars of this and other improvements of Pythagoras in muſic, and the wonderful diſcovery made by him of the proportions of muſical ſounds, it may be proper to take notice of two variations in the ſeptenary, introduced by a philoſopher, and a diſciple of Pythagoras, named Philolaus; the one whereof, for ought we can diſcover, ſeems to have been but very inconſiderable, that is to ſay, no more than an alteration of the term Meſe, which, becauſe that ſound was a third diſtant from Nete, he called Trite; the other conſiſted in an extenſion of the diateſſeron included between the Meſe and Nete to a diapente, by the inſertion of a trihemitone between Parameſe, or as he termed it, Trite and Paranete; by which the ſyſtem, though it laboured under the inconvevience of an Hiatus, comprehended the interval of a diapaſon, the extreme terms whereof formed a conſonance much more grateful to the ear than any of thoſe contained in that of Terpander. Nicomachus ſpeaks more than once of Philolaus, and ſays that he was the firſt who called that Trite, which before was named Parameſe, as being a diateſſeron diſtant from Nete. But although it is certain that he was a contemporary of Pythagoras, we muſt ſuppoſe this improvement of his to be prior to that of Pythagoras above hinted at; for the latter adopted the appellation of Trite, though by reſtoring the ancient name Parameſe, which he gave to the inſerted tone, he altered the ſituation of it, as will be ſhewn hereafter.

SYSTEM

SYSTEM of PHILOLAUS.



The gradual improvements of this ſyſtem from the time of Terpander to that of Philolaus having been ſeverally enumerated, and its imperfection noted, we are now to ſpeak of thoſe made by Pythagoras. His regulation of the octave by the inſertion of a tone has been juſt hinted, and it will be neceſſary to be more particular; but previous to this it is requiſite to mention that diſcovery of his, which though merely accidental, enabled him to inveſtigate the ratios of the conſonances, and to demonſtrate that the foundations of muſical harmony lay deeper than had ever before his time been imagined.

Of the manner of this diſcovery Nicomachus has given a relation, which Mr. Stanley has inſerted in his Hiſtory of Philoſophy in nearly the following terms.

‘ Pythagoras being in an intenſe thought whether he might invent ‘ any inſtrumental help to the ear, ſolid and infallible, ſuch as the ‘ ſight hath by a compaſs and a rule, and by a Dioptre; or the ‘ touch, or by a balance, or by the invention of meaſures; as he ‘ paſſed by a ſmith's ſhop by a happy chance he heard the iron ham-

'mers ſtriking on the anvil, and rendering ſounds moſt conſonant 'to one another in all combinations except one. He obſerved in 'them theſe three concords, the diapaſon, the diapente, and the 'diateſſeron; but that which was between the diateſſeron and the 'diapente he found to be a diſcord in itſelf, though otherwiſe uſe-'ful for the making up of the greater of them, the diapente. Ap-'prehending this came to him from God, as a moſt happy thing, 'he haſtened into the ſhop, and by various trials finding the diffe-'rence of the ſounds to be according to the weight of the hammers, 'and not according to the force of thoſe who ſtruck, nor according 'to the faſhion of the hammers, nor according to the turning of the 'iron which was in beating out: having taken exactly the weight 'of the hammers, he went ſtraightway home, and to one beam 'faſtened to the walls, croſs from one corner of the room to the 'other, leſt any difference might ariſe from thence, or be ſuſpect-'ed to ariſe from the properties of ſeveral beams, tying four ſtrings 'of the ſame ſubſtance, length, and twiſt, upon each of them he 'hung a ſeveral weight, faſtening it at the lower end, and making 'the length of the ſtrings altogether equal; then ſtriking the ſtrings 'by two at a time interchangeably, he found out the aforeſaid con-'cords, each in its own combination; for that which was ſtretched 'by the greateſt weight, in reſpect of that which was ſtretched by 'the leaſt weight, he found to ſound a Diapaſon. The greateſt 'weight was of twelve pounds, the leaſt of ſix; thence he deter-'mined that the diapaſon did conſiſt in double proportion, which 'the weights themſelves did ſhew. Next he found that the 'greateſt to the leaſt but one, which was of eight pounds, ſounded 'a Diapente; whence he inferred this to conſiſt in the proportion 'called Seſquialtera, in which proportion the weights were to one 'another; but unto that which was leſs than itſelf in weight, yet 'greater than the reſt, being of nine pounds, he found it to ſound a 'Diateſſeron; and diſcovered that, proportionably to the weights, 'this concord was Seſquitertia; which ſtring of nine pounds is natu-'rally Seſquialtera to the leaſt; for nine to ſix is ſo, viz. Seſquialtera, 'as the leaſt but one, which is eight, was to that which had the 'weight ſix, in proportion Seſquitertia; and twelve to eight is Seſ-'quialtera; and that which is in the middle, between Diapente and 'Diateſſeron, whereby Diapente exceeds Diateſſeron, is confirmed

'to be in Seſquioctava proportion, in which nine is to eight. The 'ſyſtem of both was called Diapaſon *, that is both of the Diapente 'and Diateſſeron joined together, as duple proportion is compound-'ed of Seſquialtera and Seſquitertia; ſuch as are twelve, eight, ſix, 'or on the contrary, of Diateſſeron and Diapente, as duple propor-'tion is compounded of Seſquitertia and Seſquialtera, as twelve, nine, 'ſix, being taken in that order.

'Applying both his hand and ear to the weights which he had 'hung on, and by them confirming the proportion of the relations, 'he ingeniouſly transferred the common reſult of the ſtrings upon 'the croſs beam to the bridge of an inſtrument, which he called 'Χορδοτόνος, *Chordotonos*; and for ſtretching them proportionably to 'the weights, he invented pegs, by the turning whereof he diſtend-'ed or relaxed them at pleaſure. Making uſe of this foundation as 'an infallible rule, he extended the experiment to many kinds of 'inſtruments, as well pipes and flutes, as thoſe which have ſtrings †; 'and he found that this concluſion made by numbers was conſonant 'without variation in all. That ſound which proceeded from the 'number ſix he named Hypate; that from eight Meſe, being Seſ-'quitertia to the other; that from nine Parameſe, it being one tone 'more acute, and ſeſquioctave to the Meſe; that from twelve he 'termed Nete; and ſupplying the middle ſpaces with proportionable 'ſounds, according to the diatonic genus, he ſo ordered the octo-'chord with convenient numbers, Duple, Seſquialtera, Seſquitertia, 'and the difference of the two laſt, Seſquioctava.

'Thus by a kind of natural neceſſity he found the progreſs from 'the loweſt to the higheſt, according to the diatonic genus; and 'from thence he proceeded to declare the chromatic and enarmonic 'kinds ‡'. Hiſt. of Philoſophy, pag. 387. folio edit. 1701.

* i. e. per omnes.

† This ſeems difficult to conceive, for the tuning of pipes and flutes is regulated by the ſize and diſtance of the apertures for the emiſſion of the wind or breath; and to theſe the proportions of ſix, eight, nine, twelve, are in no way whatever applicable.

‡ The reſult of this diſcovery is, that conſonancy is founded on geometrical principles, the contemplation whereof, and the making them the teſt of beauty and harmony, is a pleaſure ſeparate and diſtinct from that which we receive by the ſenſes. This geometrical relation of the conſonances has been farther illuſtrated by Archimedes, who has demonſtrated that the proportions of certain ſolid bodies are the ſame with thoſe of the muſical conſonances: to ſpeak firſt of the diapaſon.

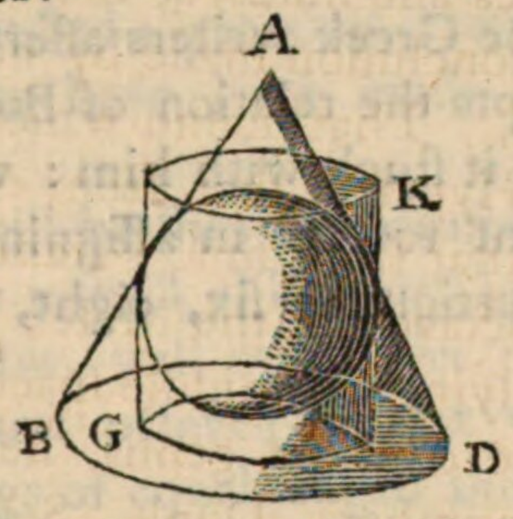
By a corollary from the thirty-fourth propoſition of Archimedes it is ſhewn, that the proportion of the octave is as the whole ſuperficies of a right cylinder deſcribed about a ſphere,

Other writers attribute the diſcovery of the conſonances to another, namely Diocles, who, ſay they, paſſing by a potter's ſhop, chanced to ſtrike his ſtick againſt ſome empty veſſels which were ſtanding there; that obſerving the ſounds of grave and acute reſulting from the ſtrokes on veſſels of different magnitudes, he inveſtigated the proportions of muſic, and found them to be as above related †; notwithſtanding which teſtimony, the uniform opinion of

ſphere, is to the whole ſuperficies of an equilateral cylinder inſcribed, that is to ſay, as 2 is to 1. For the circumſcribed is to the ſpheric ſuperficies as 12 is to 8; but the ſpheric is to the inſcribed as 8 is to 6; therefore the circumſcribed is to the inſcribed as 12 is to 6, or 2 to 1. Vide Theorems ſelected out of Archimedes by Andrew Tacquet, printed at the end of Whiſton's Euclid.

As to the diateſſeron, the proportion of it is preciſely the ſame with that which ſubſiſts between the ſuperficies of a ſphere and the whole ſuperficies of a ſquare cylinder inſcribed therein, viz. 4 to 3. Ibid. Prop. xxxiv.

But which is admirable, the ſeſquialteral proportion of the diapente, and of the ſame interval continued, is demonſtrated by Tacquet himſelf, by a ſphere, a right cylinder, and an equilateral cone thus diſpoſed:



His words are theſe: 'An equilateral cone circumſcribed about a ſphere, and a right 'cylinder in like manner circumſcribed about the ſame ſphere, and the ſame ſphere itſelf 'continue the ſame proportion; to wit, the ſeſquialteral, as well as in reſpect of the ſoli-'dity as of the whole ſuperficies.

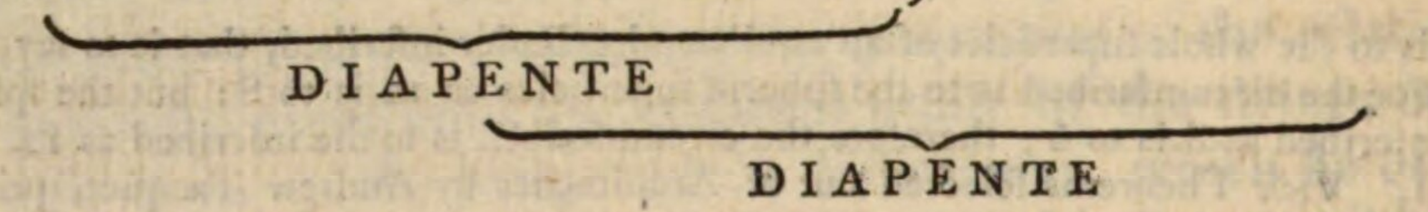
'For by 32 of this book, the right cylinder G K encompaſſing the ſphere, is to the ſphere, 'as well in reſpect of ſolidity, as of the whole ſuperficies, as 3 is to 2 oras 6 to 4. But 'by the foregoing, the equilateral cone B A D circumſcribed about the ſphere, is to the 'ſphere, in both the ſaid reſpects, as 9 is to 4. Therefore the ſame cone is to the cylin-'der, both in reſpect of ſolidity and ſurface, as nine is to ſix: wherefore theſe three bodies, 'a cone, a cylinder, and ſphere, are betwixt themſelves as the numbers 9, 6, 4; and 'conſequently continue the ſeſquialteral proportion.' Q. E. D. Prop. xlv. at the concluſion of the Theorems of Archimedes by Tacquet.

Farther the ſame author ſhews, that the ſame ſeſquialteral proportion holds betwixt an equilateral cone and cylinder circumſcribed about the ſame ſphere, in reſpect of their whole ſurfaces, their ſimple ſurfaces, their ſolidities, altitudes, and baſes.

Archimedes was ſo delighted with the thirty-ſecond of his propoſitions, above referred to, that he left it in charge to his friends to erect on his tomb a ſphere included in a cylinder, and Tacquet ſeems to have been little leſs pleaſed with his improvement on it, for he has given the figure referred to in the demonſtration of it, in the title page of his Theorems ſelected from Archimedes.

† Vincent. Galilei, Dial. della Muſica, pag. 127.

mankind has been, that we owe this invention to Pythagoras; the reſult whereof may be conceived by means of the following diagram.



It is obſervable that there is nothing in this account to authoriſe the ſuppoſition that the lyre of Mercury was tuned in any of thoſe proportions which this diſcovery had ſhewn to be conſonant. Bontempi, who, as we have hinted before, had his doubts about it, ſays expreſsly that none of the Greek writers aſſert any ſuch matter; and Zarlino, though he adopts the relation of Boetius, does it in ſuch a way as ſufficiently ſhews it ſtuck with him: we may therefore juſtly reſpect that Boetius went too far in aſſigning to the ſtrings of the Mercurian lyre the proportions of ſix, eight, nine, twelve.

CHAP. III.

IF we conſider the amount of this diſcovery, it will appear to be, that certain ſounds, which the human ear had previouſly recognized as grateful and harmonious, were, by the ſagacity of Pythagoras, found to have a wonderful relation to each other in certain proportions; that thoſe proportions do really ſubſiſt between the muſical concords above-mentioned is demonſtrated by Ptolemy, and will be ſhewn hereafter; but then it has been by experiments of a different kind from that of ſtrings diſtended by hammers or other weights in the proportions of ſix, eight, nine, twelve, and ſuch as prove a moſt egregious error in thoſe ſaid to be made by Pythagoras; ſo that though his title to the diſcovery of the proportions above-mentioned is not conteſted; yet that it was the reſult of the experiment above related to have been made by him, is demonſtrably falſe.

For ſuppoſe, as will be ſhewn hereafter, that the ſounds of four ſtrings, in every other reſpect alike, and in length as theſe numbers, ſix, eight, nine, twelve, will make the intervals above-mentioned, viz. a fourth, fifth, and octave; yet let weights in theſe proportions be hung to ſtrings of equal length and thickneſs, and the intervals between the ſounds produced by ſtrings thus diſtended will be far different from thoſe above-mentioned.

It is ſaid that we owe the detection of this error to the penetration and induſtry of Galileo Galilei, whoſe merits as well as ſufferings are ſufficiently known. He was the natural ſon of a noble Florentine named Vincentio Galilei, the author of a moſt learned and valuable work, intitled Dialogo della Muſica antica e moderna, printed at Florence in 1581 and 1602; and alſo of a tract, intitled Diſcorſo intorno all' Opere del Zarlino; and of his father, who was an admirable performer on the lute, learned both the theory and practice of muſic; in the latter whereof he is ſaid to have been ſuch a proficient, as to be able to perform to a great degree of excellence on a variety of inſtruments; however, notwithſtanding this his propenſity to muſic, his chief purſuits were natural philoſophy and the mathematics.

The

The inquiſitiveneſs of his temper leading him to the making experiments, in the courſe thereof he made many noble diſcoveries; that of the teleſcope ſeems to be univerſally attributed to him; his firſt eſſay towards an inſtrument for viewing the planets was an organ-pipe with glaſſes fixed therein; and it was he that firſt inveſtigated thoſe laws of pendulums, which Mr. Huygens afterwards improved into a regular and conſiſtent theory.

In a work of the younger Galilei, intitled Diſcorſi e Dimoſtrazioni Matematiche intorno à due nuove Scienze, attenenti alla Mecanica, & i Movimenti locali, is contained a detection of that error, which it is here propoſed to refute.

It is true ſome writers refer this diſcovery to Vincentio Galilei; and firſt Bontempi ſays, that in his diſcourſe on the works of Zarlino, he affirms, that in order 'to find the conſonances by weights 'hung to chords, the weight to produce the diapaſon ought to be 'in quadruple proportion; that to produce the diapente ought to 'be in dupla ſeſquiquarta; for the diateſſeron in ſeſquiſettima par-'tientenono and for the tone in ſeſquiſettima partiente 64 *.

Malcolm alſo, ſpeaking of the diſcovery of the conſonances by Pythagoras, makes uſe of theſe words: 'But we have found an 'error in this account, which Vincenzo Galileo, in his Dialogues of 'the ancient and modern Muſic, is, for what I know, the firſt who 'obſerves; and from him Meibomius repeats it in his notes upon 'Nicomachus †.'

Here it may be obſerved, that this author Malcolm has himſelf been guilty of two miſtakes; for firſt, it is not in his notes on Nicomachus, but in thoſe on Gaudentius that Meibomius mentions the error now under conſideration: and farther, in the paſſage of Meibomius, which Malcolm meant to refer to, the diſcovery is not aſcribed to Vincentio Galilei, but to Galileo Galilei his ſon. To take the whole together, Gaudentius, ſpeaking of the experiment of Pythagoras, and aſſerting, that if two equal chords be diſtended by weights in the ſame proportion to each other as the terms of the ratio, containing any interval, thoſe chords when ſtruck will give that interval. Meibomius upon this paſſage remarks in the following words: 'Mirandum ſane, hanc experientiam, tot graviſſimorum aucto-

* Hiſt. Muſic. pag. 54. † Malcolm on Muſic, pag. 503.

'rum

'rum adſertione confirmatam, noſtro primum ſeculo deprehenſam 'eſſe falſam. Inventionis gloriam debemus nobiliſſimo mathematico 'Galileo Galilei, quem vide pag. 100. Tractatus qui inſcribitur: Diſ-'corſi e Dimoſtrazioni Matematiche intorno à due nuove Scienze *'.

But notwithſtanding Bontempi has given from the elder Galilei a paſſage which ſeems to lead to a diſcovery of the error of Pythagoras, yet he himſelf acquieſces in the opinion of Meibomius, that the honour of a formal refutation of it is due to the younger, and is contained in the paſſage above referred to, which tranſlated is as follows.

'I ſtood a long time in doubt concerning the forms of conſonance, 'not thinking the reaſons commonly brought by the learned authors 'who have hitherto wrote of muſic ſufficiently demonſtrative. They 'tell us that the diapaſon, that is the octave, is contained by the 'double; and that the diapente, which we call the fifth, is contained by 'the ſeſquialter: for if a ſtring, ſtretched upon the monochord, be 'ſounded open, and afterwards placing a bridge under the midſt of 'it, its half only be ſounded, you will hear an eighth; and if the 'bridge be placed under one third of the ſtring, and you then ſtrike 'the two thirds open, it will ſound a fifth to that of the whole ſtring 'ſtruck when open; whereupon they infer that the eighth is con-'tained between two and one, and the fifth between three and two. 'But I do not think we can conclude from hence that the double 'and ſeſquialteral can naturally aſſign the forms of the diapaſon and 'diapente; and my reaſon for it is this: there are three ways by 'which we may ſharpen the tone of a ſtring, viz. by ſhortening it, 'by ſtretching it, or by making it thinner: if now, retaining the 'ſame tenſion and thickneſs, we would hear an eighth, we muſt 'make it ſhorter by half; i. e. we muſt firſt ſound the whole ſtring, 'and then its half. But if, keeping the ſame length and thickneſs, 'we would have it riſe to an eighth from its preſent tone, by ſtretch-'ing it, or ſcrewing it higher, it is not ſufficient to ſtretch it with a 'double, but with four times the force: thus, if at firſt it was diſ-'tended by a weight, ſuppoſe of one pound, we muſt hang a four-'pound weight to it, in order to raiſe its tone to an eighth. And 'laſtly, if, keeping the ſame length and tenſion, we would have a 'ſtring to ſound an eighth, this ſtring muſt be but one fourth of the 'thick-

* Meibom. Not. in Gaudent. pag. 37.

'thickneſs of that which it muſt ſound an eighth to *. And this 'that I ſay of the eighth, I would have underſtood of all other muſi-'cal intervals. To give an inſtance of the fifth, if we would pro-'duce it by tenſion, and in order thereto hang to the grave ſtring a 'four-pound weight; we muſt hang to the acute, not one of ſix, 'which yet is in ſeſquialtera proportion to four, viz. three to two, 'but one of nine pounds. And to produce the above intervals by 'ſtrings of the ſame length, but different thickneſs, the proportion 'between the grave and the acute ſtring muſt be that of nine to four. 'Theſe things being really ſo in fact, I ſaw no reaſon why theſe ſage 'philoſophers ſhould rather conſtitute the form of the eighth double 'than quadruple, and that of the fifth rather in ſeſquialtera than in 'double ſeſquiquarta, &c.' † Diſcorſi e Dimoſtrazioni Matematiche del Galileo Galilei, pag. 75.

To give yet farther weight to the above objection, it may be neceſſary here briefly to explain a doctrine yet unknown to the ancients, viz. that of pendulums, between the vibrations whereof, and thoſe of muſical chords, there is an exact coincidence.

* Iſaac Voſſius ſays that in this paſſage the author has erred, and with his uſual temerity aſſerts, that, cæteris paribus, the thicker the chord, the acuter the ſound. De Poemat. Cant. et Viribus Rythmi, pag. 113. And this, even though he confeſſes that both Des Cartes and Merſennus were of opinion with Galilei in this reſpect. The only appeal in ſuch a caſe as this muſt be to experiment, and whoever will make one for the purpoſe will find the converſe of this propoſition to be true, and that, as Galilei has ſaid, chords comparatively thin render acute, and not grave ſounds.

† The reaſon of theſe ſage philoſophers for doing thus, notwithſtanding that Galilei could not diſcover it, ſeems to be very obvious: they conſtituted the form of the eighth double becauſe they found it to ariſe from the diviſion of a chord into two equal parts; and the fifth they found to ariſe from the diviſion of a chord into five parts, three whereof ſtruck againſt the remaining two produced that interval; therefore they aſſigned to it the ſeſquialtera proportion, 3 to 2. And certainly there needs no better reaſon for the Pythagorean conſtitution of the conſonances, than that it is founded in the actual diviſion of a chord; and had the followers of Pythagoras reſted the matter there, their tenets would have eſcaped reprehenſion.

But they ſay of him that he produced the conſonances by chords of equal length and thickneſs, diſtended by weights of ſix, eight, nine, and twelve pounds: Galilei has ſhewn that this could not be; and from the principles laid down by writers ſince his time, as alſo by experiments, it moſt evidently appears, that to produce the conſonances, from chords thus conditioned, weights muſt be uſed of a very different proportion from thoſe ſaid to have been taken by Pythagoras.

As to the proportions, there can be no doubt but that they are as above-ſtated; but the error chargeable on the Pythagoreans is the making the diſcovery of them the reſult of an experiment, which muſt have produced, inſtead of conſonances, diſſonances of the moſt offenſive kind.

Sound is produced by the tremulation of the air, excited by the inſenſible vibrations of ſome elaſtic, ſonorous body; and it has been manifeſted by repeated experiments, that of muſical ſounds the acute are produced by ſwift, and the grave by comparatively ſlow vibrations *. A chord diſtended by a weight or otherwiſe, is, with reſpect to the vibrations made between its two extremities, to be conſidered as a double pendulum †, and as ſubject to the ſame laws.

The proportions between the lengths of pendulums, and the number of vibrations made by them, are in an inverſe duplicate ratio; ſo that if the length be quadrupled, the vibrations will be ſubdupled; on the cōntrary, if the length be ſubquadrupled, the vibrations will be dupled ‡.

The ſame proportions hold alſo with reſpect to a chord, but with this difference, that in the caſe of pendulums the ratios are inverſe, the greater length giving the fewer vibrations; whereas in that of chords they are direct, the greater tenſion giving the greater number of vibrations: thus if the tenſive power be as one, if that be quadrupled, the number of vibrations is dupled; and the ſound produced by the greater power will be duple in acumen to that produced by the leſſer. In a word, the ſame ratios that ſubſiſt between the vibrations of pendulums and their reſpective lengths, are to be found inverſely between the vibrations of chords and the powers that diſtend them: what thoſe ratios are, ſo far as they reſpect the acuteneſs or gravity of ſound, will ſhortly be made appear.

In order to apply the doctrine of tenſive powers to the queſtion in debate, it is neceſſary to ſtate the ratios of the ſeveral conſonances, and thoſe are demonſtrated to be as follows, viz. that of the diapente 3 to 2, and of the diateſſaron 4 to 3, that of the diapaſon 2 to 1, and that of the tone 9 to 8; or in other words, a chord being divided into five parts, the ſound produced at three of theſe parts will be a diapente to that produced at two; if divided into ſeven parts, four of them will ſound a diateſſaron againſt the remaining three; and if divided into three parts, two of them

* Treatiſe on the natural Grounds and Principles of Harmony, by William Holder. Paſſim.

† Ibid. xi. 43.

‡ Ibid. 16.

make a diapaſon againſt the other one: farther, if the chord be divided into ſeventeen parts, nine of them on one ſide will ſound a ſeſquioctave tone to the eight remaining on the other. Theſe are principles in harmonics which we may ſafely aſſume, and the demonſtrations may be ſeen in Ptolemy's deſcription of the nature and uſe of the Harmonic Canon *.

It is equally certain, and is deducible from the doctrine of pendulums, that if two chords, of equal lengths, A B be ſo diſtended as that their vibrations ſhall be as three to two, that is, that A ſhall make three vibrations while B is making two, the conſonance produced by ſtriking them together will be a diapente.

If the vibrations be as four to three, the conſonance will be a diateſſaron.

If the vibrations be as two to one, the conſonance will be a diapaſon; and laſtly,

If the vibrations be as nine to eight, the interval will be a ſeſquioctave tone.

We are now to enquire what are the degrees of tenſive power requiſite to produce the vibrations above-mentioned; and here we muſt recur to the principle above laid down, that the ſquares of the vibrations of equal chords are to each other as their reſpective tenſions: if then we ſuppoſe a given ſound to be the effect of a tenſion by a weight of ſix pounds, and would know the weight neceſſary to produce the diapente, which has a ratio to its uniſon of 3 to 2, we muſt take the ſquare of thoſe numbers 9 to 4, and ſeek a number that bears the ſame ratio to ſix, as nine does to four, and this can be no whole number, but is thirteen and a half.

By the ſame rule we adjuſt the weight for the diateſſaron, 4 to 3, which numbers ſquared are ſixteen and nine, and as 16 is to 9, ſo is $10\frac{2}{3}$ to 6.

For the diapaſon 2 to 1, which numbers ſquared are 4 to 1, the weight muſt be twenty-four; for as 4 is to 1, ſo is 24 to 6.

* Merſennus recommends for the purpoſe of making theſe experiments, the uſe of two chords rather than one, for this reaſon, that where one only is taken, only one ſound can be heard at a time; whereas when two are uſed, both ſounds are heard at the ſame inſtant, and thereby the conſonance is perceived. Harmonie univerſelle, Traitè des Inſtrumens, Prop. v.

The

The ſeveral weights above adjuſted, have a reference to the uniſon expreſſed in the ſcheme of Pythagoras, by the number ſix, ſuppoſed to reſult from a tenſion of ſix pounds. But the ſeſquioctave tone, as it is the difference between the diapente and diateſſaron, takes its ratio from the ſound expreſſed by the number eight, as the diapente does from that expreſſed by nine; in order then to adjuſt the weight for this interval, we muſt ſquare thoſe numbers; and as 81 is to 64, ſo is $13\frac{1}{2}$ to $10\frac{2}{3}$.

Whoever is diſpoſed to prove the truth of theſe poſitions, and doubts the certainty of numerical calculation, may have recourſe to experiment; in which however this caution is to be obſerved, that in the making it the utmoſt degree of accuracy is neceſſary; for it ſhould ſeem that one of the authors above-cited failed in an attempt of this ſort, which is not to be wondered at, if we conſider the nature of the ſubject.

The author here meant is Bontempi; who, after citing the authority of Vincentio and Galileo Galilei, adds, that, 'prompted by curioſity, he made an experiment by hanging weights to ſtrings of 'equal lengths and thickneſs, the reſult whereof was, that the 'firſt and ſecond ſtrings, having weights of 12 and 9, produced 'not the diateſſaron, but the trihemitone; the firſt and third 12, '8, not the diapente but the ditone; the firſt and fourth, 12, '6, not the diapaſon but the tritone; the ſecond and the third, 9, '8, not the tone, but the defective or incomplete hemitone; the 'ſecond and fourth, 9, 6, not the diapente, but the ſemiditone; and the third and fourth 8, 6, not the diateſſaron, but the 'diſtended or exceſſive tone, as the following figure demonſtrates *.

* Egli è coſa da reſtar confuſo, e formare un cumulo di maraviglie, che queſto ſperimento, confermato da graviſſimi autori, e tenuto tanti ſecoli per vero ſia ſtato finalmente ſcoperto eſſer falſo da Galileo Galilei, ſicome riferiſce ne' ſuoi Diſcorſi e Dimoſtrazioni Mathematiche, e Vincenzo Galilei nel diſcorſo intorno all' opere del Zarlino afferma, che per ritrovare co' peſi attaccati alle corde le conſonanze de Martelli; per la diapaſon debbono coſtituirſi i peſi in quadrupla proportione; per la diapente, in dupla ſeſquiquarta; per la diateſſaron, in ſeſqui 7 partiente 9; e pe'l tuono, in ſeſqui 7 partiente 64. E noi, ſpinti dalla curioſità meſſo in opera queſto ſperimento co' peſi de Martelli, habbiamo ritrouato che il primo et il ſecondo 12, 9, partoriſcono non la diateſſaron: ma il triemituono; il primo ed il terzo 12, 8, non la diapente: ma il ditono; il primo e'l quarto 12, 6, non la diapaſon; ma il tritono; il ſecondo e'l terzo 9, 8, non il tuono: ma l'hemituono rimeſſo o mancante; il ſecondo e'l quarto 9, 6, non la diapente: ma il ſemiditono; ed il terzo e'l quarto 8, 6, non la diateſſaron: ma il tuono diſteſo overo eccedente, ſicome la ottoposta figura dimoſtra. Bontempi, pa. 54.

TRITONE.

TRIHEMITONE. HEMITONE incomplete. TONE exceſſive.

12 9 8 6

DITONE.

SEMIDITONE.

But that the proportions of a diateſſaron tone and diateſſaron would reſult from an experiment made by ſtrings of the ſeveral lengths of twelve, nine, eight, ſix; or rather by a diviſion of the monochord, according to that rule, is demonſtrable. This invention of Pythagoras, as it regarded only the proportions or ratios of ſounds, was applicable to no one ſyſtem in particular; however it produced a diſcovery, which enabled him at once to ſupply a defect in even the improved ſyſtem of Terpander, and lay a foundation for that more enlarged one, which is diſtinguiſhed by his name, and has never ſince his time been capable of any ſubſtantial improvement. We are here to remember that the diapaſon or octave had been found to conſiſt in duple proportion, or in the ratio of 12 to 6; and that the interval between the diateſſaron twelve, nine, and that other eight, ſix, viz. nine, eight, was a complete tone, or ſeſquioctave ratio. Pythagoras, in conſequence of this diſcovery recurring to the antient ſeptenary, found that its extremes were diſcordant, and that there wanted but little to produce that ſupremely ſweet concord the diapaſon, which the means above had enabled him to inveſtigate. Obſerving farther that in the ſeptenary the interval between Meſe and Parameſe was but a hemitone, he immediately interpoſed between them a whole tone, and thereby completed the diapaſon.

Ptolemy obſerves, that it is extremely difficult to find chords perfectly equal in reſpect of craſſitude, denſity, and other qualities that determine their ſeveral ſounds; and farther he ſays, that the ſame chord diſtended by the ſame weight, will at different times yield different ſounds. Ptolem. Harmonicor. lib. I. cap. 8. Ex verſ. Wallis. Merſenn. Harm. univerſelle, Traite des Inſtrumens, Prop. iv. So that the ſucceſs of experiments for inveſtigating the conſonances, by the means of weights hung to chords, muſt be very precarious, and is little to be depended on.

It

It muſt be confeſſed that ſome authors have in general terms aſcribed the addition of an eighth ſtring to the heptachord lyre to others; Boetius gives it to Licaon, and Pliny to Simonides; but Nicomachus, from whom the following relation is taken, does moſt expreſsly attribute it to Pythagoras.

Hiſtory has alſo tranſmitted to us the bare names of ſundry perſons, by whom at different times the ſtrings of the lyre are ſaid to have been encreaſed to eighteen in number; as Theophraſtus, who added a ninth; Heſtius, who added a tenth, and ſo on *; but as to the ratio ſubſiſting between them, or any ſyſtem to which they could be ſaid to be adapted, there is a total ſilence. Indeed we have the greateſt reaſon to think that theſe additions were not made in any ratio whatever, but ſerved only to increaſe the variety of ſounds ‡. That innovations were made in the heptachord is certain; and when we are informed that Timotheus, for his preſumption in adding to the ſtrings of the ancient lyre, had a fine impoſed on him by the magiſtracy, we may fairly conclude that thoſe innovations tended rather to the corruption than the improvement of muſic.

But the caſe is different with reſpect to him of whom we are now ſpeaking; the ſyſtem of Pythagoras had its foundation in nature: the improvement of an inſtrument was not his care; he was a philoſopher and a muſician in the genuine ſenſe of the word, and propoſed nothing leſs than the eſtabliſhment of a theory to which the practice of ſucceeding ages ſhould be accommodated. His motives for attempting it, and in what manner he effected this great purpoſe, ſhall now be given in the words of his learned biographer.

'Pythagoras, leſt the middle ſound by conjunction being compared to the two extremes, ſhould render the diateſſaron concent both to the Nete and the Hypate; and that we might have a greater variety, the two extremes making the fulleſt concord each to other, that is to ſay, a diapaſon, which conſiſts in duple proportion, inſerted an eighth ſound between the Meſe and the Parameſe, placing it from the Meſe a whole tone, and from the Parameſe a ſemitone; ſo that what was formerly the Parameſe in the heptachord,

* Boetius de Muſica, lib. ii. cap. 20. Vincen. Galilei, Dial. della Muſica, pag. 116.
‡ Nicom. lib. ii. Boet. lib. i. cap. 20. Bont. pag. 71.

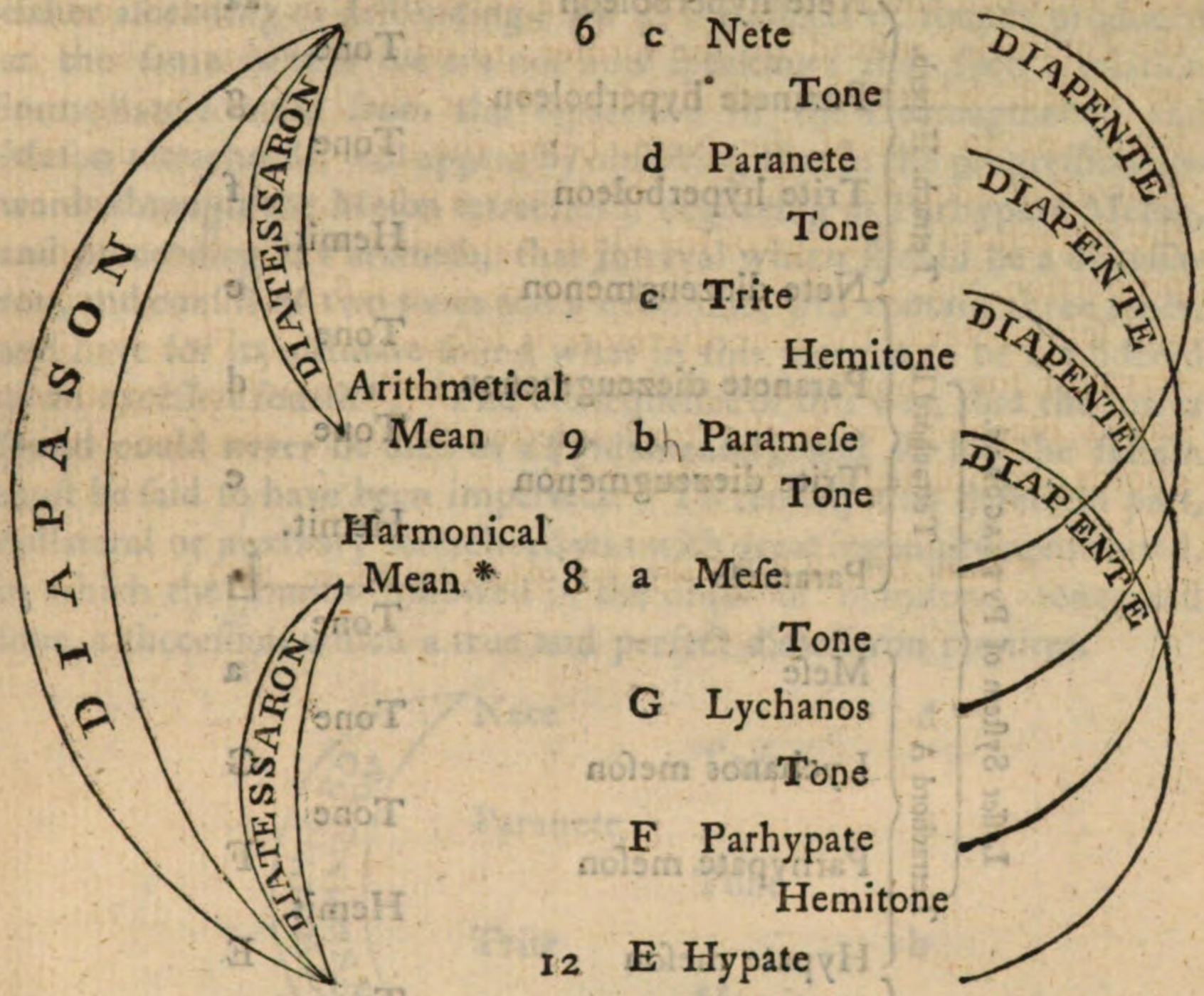
'is

'is ſtill the third from the Nete, both in name and place; but that 'now inſerted is the fourth from the Nete, and hath a concent to it 'of diateſſaron, which before the Meſe had to the Hypate: but the 'tone between them, that is the Meſe, and the tone inſerted, called 'the Parameſe, inſtead of the former, to whichſoever tetrachord it 'be added, whether to that which is at the Hypate, being the 'lower, or to that of the Nete, being the higher, will render the 'concord of diapente; which is either way a ſyſtem, conſiſting both of 'the tetrachord itſelf, and of the additional tone: And as the diapente 'proportion, viz. ſeſquialtera, is found to be a ſyſtem of ſeſquitertia 'and ſeſquioctava, the tone therefore is ſeſquioctava. Thus the in-'terval of four chords, and of five, and of both conjoined together, 'called diapaſon, with the tone inſerted between the two tetra-'chords, completed the octochord *."

* Stanl. Hiſt. of Philoſophy, pag. 386, from Nicom. lib. i.

SYSTEM

SYSTEM of PYTHAGORAS.

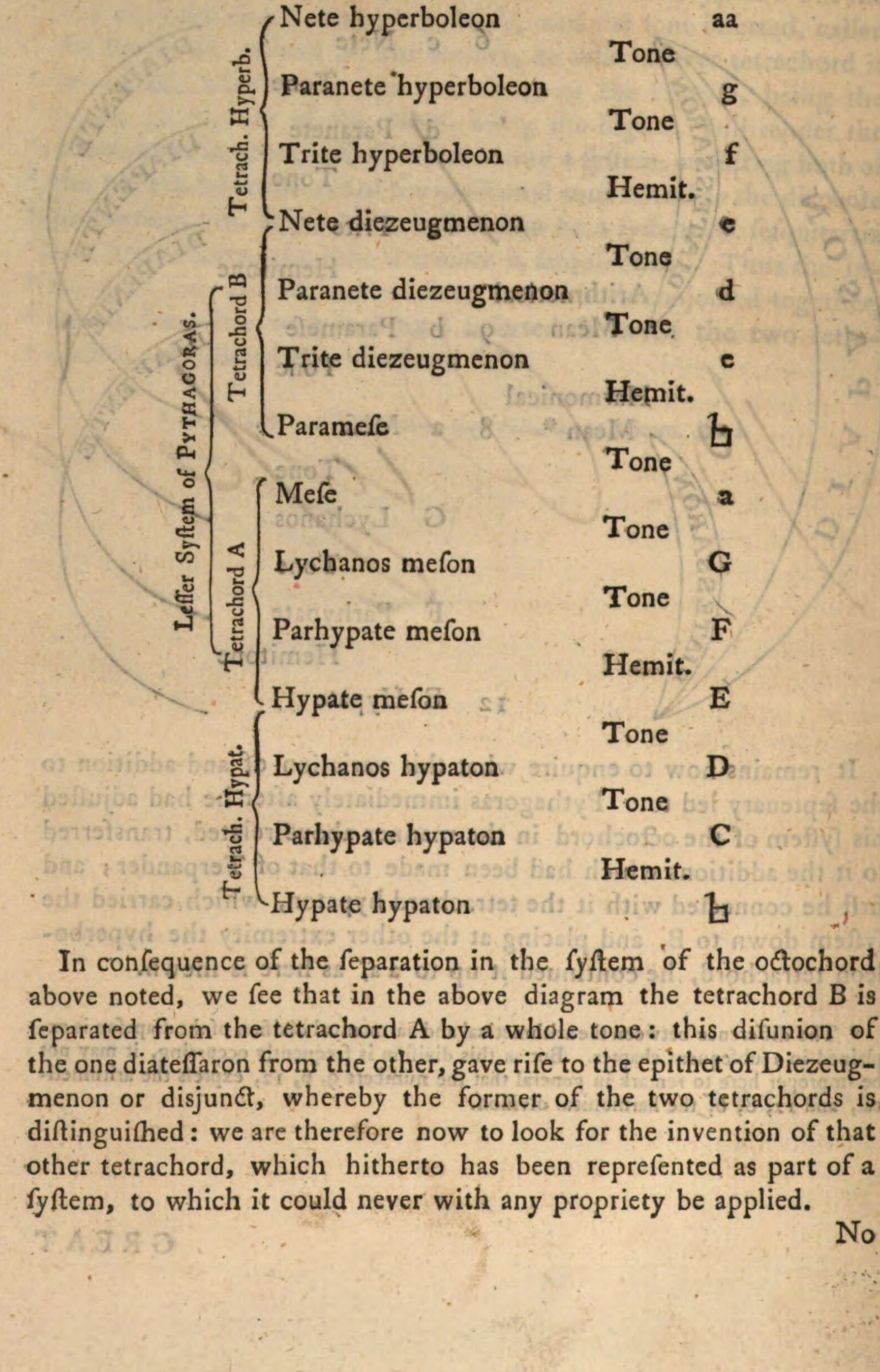


It remains now to enquire what this variation of and addition to the ſeptenary led to. Pythagoras immediately after he had adjuſted his ſyſtem of the octochord in the manner above related, transferred to it the additions which had been made to that of Terpander; and firſt he connected with it the tetrachord hypaton, which carried the ſyſtem down to B, and placing at the other extremity the hyperboleon tetrachord, he continued it up to a a, as here is ſhewn.

* The difference between the arithmetical and harmonical diviſion of the diapaſon is explained in a ſubſequent chapter. But as this diviſion is frequently occurring, it may not be improper here to remark in general that the numbers 9, 6, 12, expreſs the arithmetical, and 12, 8, 6, the harmonical diviſion.

GREAT

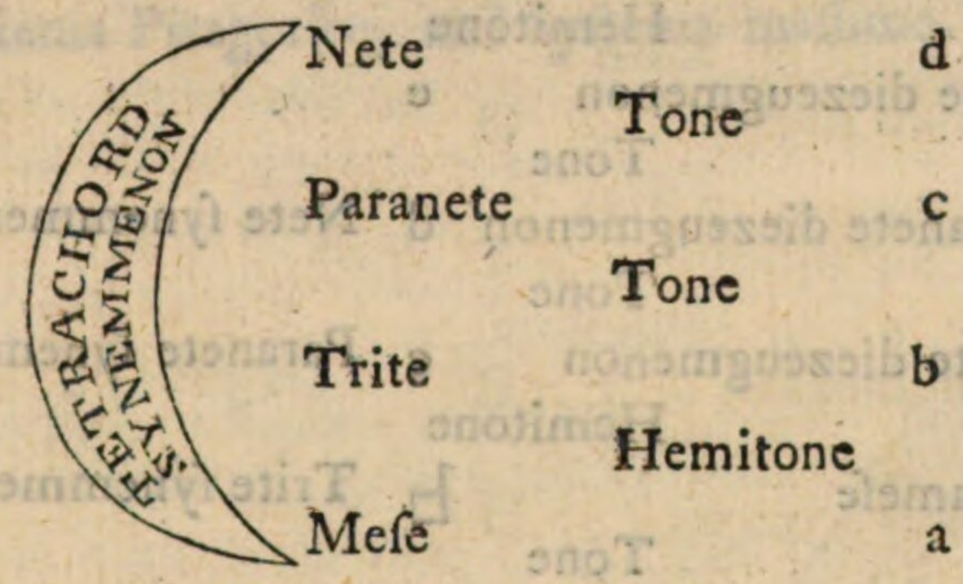
GREAT SYSTEM of PYTHAGORAS.



In conſequence of the ſeparation in the ſyſtem of the octochord above noted, we ſee that in the above diagram the tetrachord B is ſeparated from the tetrachord A by a whole tone: this diſunion of the one diateſſaron from the other, gave riſe to the epithet of Diezeugmenon or disjunct, whereby the former of the two tetrachords is diſtinguiſhed: we are therefore now to look for the invention of that other tetrachord, which hitherto has been repreſented as part of a ſyſtem, to which it could never with any propriety be applied.

No

No one in the leaſt acquainted with the principles of harmony need be told, that that relation which modern muſicians denominate a Tritonus, can have no place in any regular ſeries of progreſſion, either aſcending or deſcending; for of the effects of ſounds produced at the ſame inſtant we are not now ſpeaking: that ſuch a relation immediately aroſe from the ſeparation of the Diezeugmenon and Meſon tetrachords, will appear by obſerving that in the progreſſion upwards through the Meſon tetrachord, beginning at Parhypate Meſon, and proceeding to Parameſe, that interval which ſhould be a diateſſaron, and conſiſt of two tones and a hemitone, will contain three tones, and have for its ultimate ſound what in this place is to be conſidered as an exceſſive fourth *. The conſequence of this was, that the lower ſound could never be uſed as a fundamental; and ſo far the ſyſtem muſt be ſaid to have been imperfect. To remedy this defect in part, collateral or auxiliary tetrachord was with great ingenuity conſtituted, in which the ſounds followed in the order of hemitone, tone, and tone, a ſucceſſion which a true and perfect diateſſaron requires.



The intervals that compoſe this ſyſtem will appear upon compariſon to be preciſely the ſame with thoſe of the tetrachord B, in the conjunct ſyſtem; whereas between the tetrachord B, in the disjunct ſyſtem, and that at preſent under conſideration, this difference is apparent; in the former the diſtance between a and b is a whole tone, in the latter it is a hemitone: if therefore this queſtion ſhould be aſked, Wherein did the merit of the improvements made by Py-

* Some writers have given the name of Tritonus to the defective fifth, ◻ f, for this reaſon, that it is an interval compounded of hemitone, tone, tone, and hemitone, the ſum whereof is three tones. But in this they are miſtaken, for the ratios of the tritonus or exceſſive fourth, and the ſemidiapente or defective fifth are different, the one being 45 to 32, the other 64 to 45. Vide Merſennus Harmonic, De Diſſonantiis, pag. 75. Holder on the natural Grounds and Principles of Harmony, pag. 128.

thagoras to the ancient ſyſtem conſiſt? the anſwer would be, firſt, in the invention of the disjunct ſyſtem, and the conſequent completion of the octochord; next in the introduction of the octochord into the ſyſtem of Terpander; and laſtly, in ſuch a diſpoſition of the disjunct tetrachord as was yet conſiſtent with the re-admiſſion of that part of the ſyſtem which it ſeems to exclude whenever the perfection of the harmony ſhould require it. After what has been ſaid it will be needleſs to add that this collateral tetrachord was diſtinguiſhed by the epithet of Synemmenon or conjunct. With theſe improvements the Pythagorean ſyſtem aſſumed the following form.

ADDITION to the Great Syſtem of PYTHAGORAS.

Leſſer Syſtem of PYTHAGORAS.

Tetrach. hyperb.

Nete hyperboleon aa
Tone
Paranete hyperboleon g
Tone
Trite hyperboleon f
Hemitone

Tetrach. diez. B

Nete diezeugmenon e
Tone
Paranete diezeugmenon d
Tone
Trite diezeugmenon c
Hemitone
Parameſe ♭
Tone

Tetrach. meſon A

Meſe a
Tone
Lychanos meſon G
Tone
Parhypate meſon F
Hemitone
Hypate meſon E
Tone

Tetrach. hypat.

Lychanos hypaton D
Tone
Parhypate hypaton C
Hemitone
Hypate hypaton ♭

Nete ſynemmenon d
Tone
Paranete ſynemmenon c
Tone
Trite ſynemmenon b
Hemitone
Meſe a

There

There were two reaſons that ſeemed to ſuggeſt a ſtill farther improvement; the one was that by the ſeparation of the Diezeugmenon and Meſon tetrachords there followed an unequal diviſion of the ſyſtem; for, aſcending from Meſe to Nete Hyperboleon, the diſtance was a complete Octave; whereas deſcending to Hypate Hypaton it was only a Seventh: from hence aroſe another inconvenience, a falſe relation between Hypate Hypaton and Parhypate Meſon, which though to appearance a fifth, was in truth an interval of only two tones and two hemitones, conſtituting together the very diſcordant relation of a defective fifth. To ſupply this defect nothing more was required than the addition of a tone at the lower extremity of the ſyſtem. Pythagoras accordingly placed another chord at the diſtance of a tone below Hypate Hypaton, which he named Proſlambanomenos, a word ſignifying additional or ſupernumerary, it not being includable in the diviſion of the ſyſtem by tetrachords; and thus was completed that ſyſtem of a Biſdiapaſon or double octave, which the Italians diſtinguiſh by the ſeveral appellations of Syſtema immutabile, Syſtema diatonico, Syſtema Pitagorico, and Syſtema maſſimo.

IMMUTABLE Syſtem of PYTHAGORAS.

Leſſer Syſtem of PYTHAGORAS.

Tetrach. hyperbol.
- Nete hyperboleon aa
- Tone
- Paranete hyperboleon g
- Tone
- Trite hyperboleon f
- Hemitone

Tetrach. diezeugm. B
- Nete diezeugmenon e
- Tone
- Paranete diezeugmenon d
- Tone
- Trite diezeugmenon c
- Hemitone
- Parameſe ♮
- Tone

Tetrach. meſon A
- Meſe a
- Tone
- Lychanos meſon G
- Tone
- Parhypate meſon F
- Hemitone

Tetrach. hypaton.
- Hypate meſon E
- Tone
- Lychanos hypaton D
- Tone
- Parhypate hypaton C
- Hemitone
- Hypate hypaton ♭
- Tone
- Proſlambanomenos A

Tetrach. Synemmenon.
- Nete ſynemmenon d
- Tone
- Paranete ſynemmenon c
- Tone
- Trite ſynemmenon b
- Hemit.
- Meſe a

Here it is to be obſerved, that although in this and the preceeding ſcale the Synemmenon tetrachord is given at large, yet the generality of writers either inſert it entire in its place, immediately above the Meſon tetrachord, placing the Diezeugmenon tetrachord above it, as Kircher in his Muſurgia, tom. I. lib. III. cap. xiii. or elſe,

following perhaps the example of Guido, whoſe reformation of the ſcale might ſuggeſt this latter method as the moſt conciſe, they have borrowed from the Synemmenon tetrachord one only of its terms, Trite, and inſerted it immediately after Meſe, with Parameſe next above it; thereby leaving it to the imagination to ſelect which of the two ſounds the nature of the progreſſion might require; however, the better to explain its conſtruction and uſe, it was here thought proper to exhibit the Synemmenon tetrachord in that detached ſituation which ſeems moſt agreeable to its original formation *.

CHAP. IV.

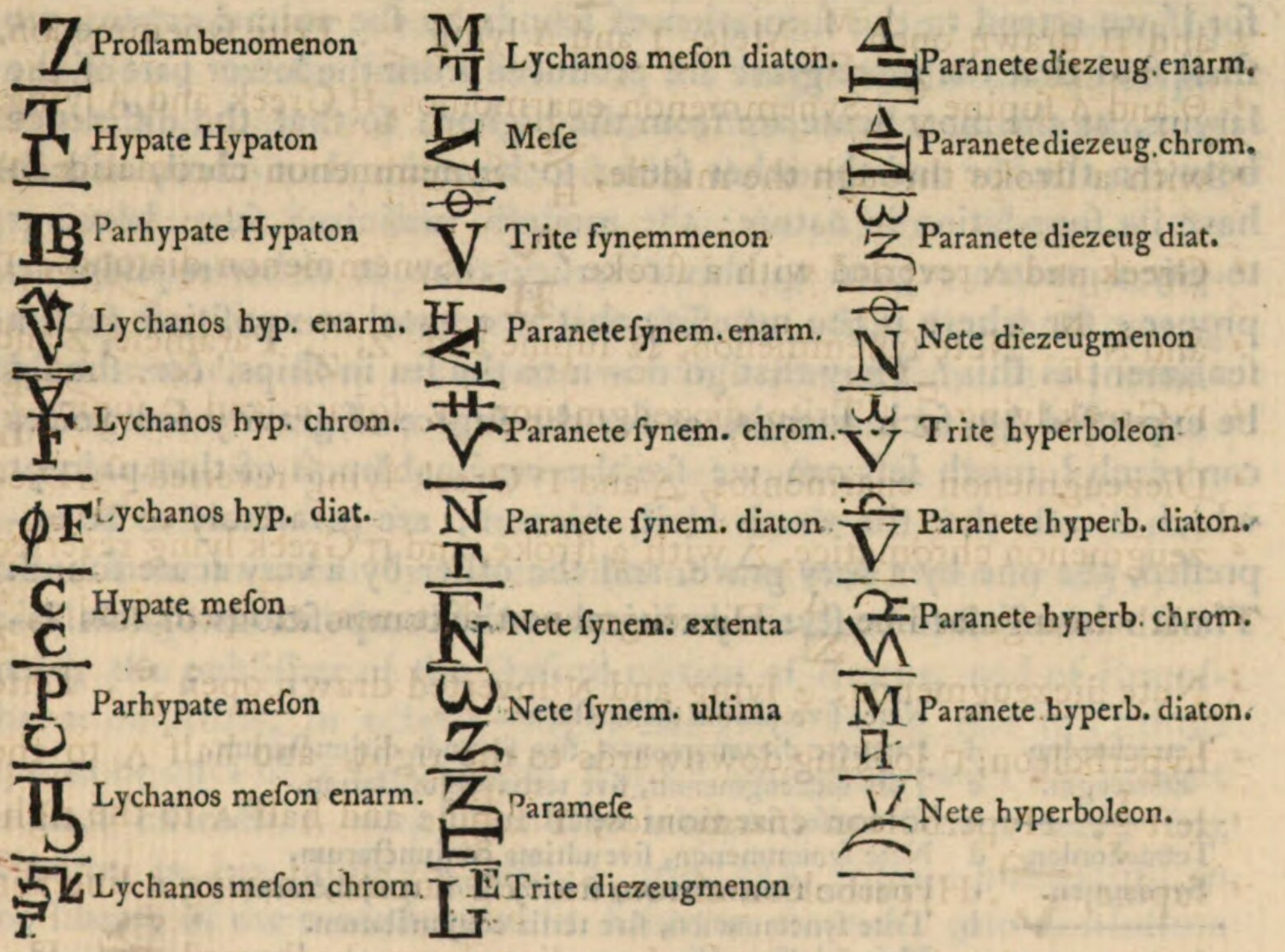
BUT here it may very naturally be aſked what were the marks or characters whereby the ancients expreſſed the different poſitions or powers of their muſical ſounds? An anſwer to this queſtion may be produced from an author of undoubted credit, Boetius, and alſo Alypius, an ancient Greek, of whoſe writings we ſhall have occaſion to ſpeak more particularly, and theſe inform us that the only characters in uſe among the Greeks to denote the ſounds in muſic, were the letters of their alphabet, a kind of Brachygraphy totally devoid of analogy or reſemblance between the ſign and the thing ſignified. Boetius de Muſica, lib. IV. cap. iii. gives an account of the ancient method of notation in the following words. 'The ancient muſicians, to avoid the neceſſity of always 'writing them at length, invented certain characters to expreſs the 'names of the chords in their ſeveral genera and modes; this ſhort 'method was the more eagerly embraced, that in caſe a muſician 'ſhould be inclined to adapt muſic to any poem, he might, by means 'of theſe characters, in the ſame manner as the words of the poem 'were expreſſed by letters, expreſs the muſic, and tranſmit it to 'poſterity. Out of all theſe modes we ſhall only ſpecify the Lydian.' This deſcription of the ſounds conſiſted in the different application of the Greek letters to each of them; Boetius proceeds thus: 'To ex-'preſs Proſlambanomenos, which may be called Acquiſitus, was uſed

* Merſenn. Harmon. lib. vi. De Generibus et Modis, pag. 100.

'Z imperfect, and tau lying ⊣. Hypate hypaton, Γ reverſed and Γ right
'⅃Γ. Parhypate hypaton, B imperfect Γ ſupine, $\frac{B}{L.}$ Hypaton enarmo-
'nios, V ſupine and Γ reverſed, having a ſtroke $\frac{\wedge}{V.}$ Hypaton chromatice,
'V, having a line and Γ reverſed, having two lines $\frac{V}{\exists}$ Hypaton dia-
'tonos, φ Greek, and digamma $\frac{\phi}{F}$. Hypate meſon C and C, $\frac{C}{C.}$ Par-
'hypate meſon P and C ſupine $\frac{P.}{C}$ Meſon enarmonios, Π Greek and C
'reverſed $\frac{\Pi.}{\supset}$ Meſon chromatice, Π having a ſtroke, and C reverſed,
'having a ſtroke through the middle $\frac{}{}$. Meſon diatonos, M Greek
'and Π drawn open $\frac{M}{\eta}$. Meſe, I and Λ lying $\frac{I}{<}$. Trite ſynemmenon,
'Θ and Λ ſupine $\frac{\Theta}{V}$. Synemmenon enarmonios, H Greek and Λ lying,
'with a ſtroke through the middle, $\frac{}{H}$ Synemmenon chromatice, H
'Greek and Λ reverſed with a ſtroke $\frac{}{H}$. Synemmenon diatonos, Γ
'and N $\frac{N}{\Gamma}$. Nete ſynemmenon, Ω ſupine and Z, $\frac{\omega}{Z}$. Parameſe, Z and
'Γ Greek lying $\frac{\sqsubset}{Z}$. Trite diezeugmenon, E ſquare and Γ ſupine $\frac{E.}{\sqcup}$
'Diezeugmenon enarmonios, Δ and Γ Greek lying reverſed $\frac{\Delta}{\Gamma}$. Die-
'zeugmenon chromatice, Δ with a ſtroke, and Π Greek lying reverſed
'with an angular line $\frac{\Delta}{\Sigma}$. Diezeugmenon diatonos, Ω ſquare and Z, $\frac{\omega}{Z}$
'Nete diezeugmenon, φ lying and N inverted drawn open $\frac{\Phi}{N}$. Trite
'hyperboleon, Γ looking downwards to the right, and half Λ to the
'left $\frac{L}{\checkmark}$. Hyperboleon enarmonios, T ſupine and half A to the right
'ſupine, $\frac{}{V}$. Hyperboleon chromatice, T ſupine, having a line and
'half A to the right ſupine, having a line drawn backward $\frac{}{И}$. Hy-
'perboleon, diatonos M Greek having an acute, and Γ having an acute
'$\frac{M'}{\eta}$. Nete hyperboleon, I having an acute, and A lying, having an
'acute alſo $\frac{I'}{A}$*.

* Boetius as he goes along gives the Latin ſignification of the Greek names, which it was thought proper to omit in order to make room for an extract from Kircher to the ſame purpoſe,

Here it is to be remarked, that although the above paſſage of Boetius is given, not from any of the printed copies of his works, but from a very ancient manuſcript, which Mr. Selden collated, and is prefixed to Meibomius's verſion of Alypius: there occur in it ſome inſtances of diſagreement between the verbal deſcription of the character and the character itſelf; ſome of theſe Meibomius in his notes has remarked, and others have eſcaped him; nevertheleſs it was not thought adviſeable to vary the repreſentation which Boetius has given, and therefore the following ſcheme of the ancient muſical characters is inſerted, as he has delivered it in lib. IV. cap. iii. of his book De Muſica.



There is this remarkable difference between the method of notation practiſed by the ancients, and that now in uſe, that the characpurpoſe, wherein the Latin are oppoſed to the Greek names in the order in which they ariſe in the ſeveral tetrachords.

———————	aa	Nete hyperboleon, five ultima acutarum.
Tetrachordon	g	Paranete hyperboleon, five ſecunda acutarum.
Neton	f	Trite hyperboleon five, tertia acutarum.

ters uſed by the former were arbitrary, totally deſtitute of analogy, and no way expreſſive of thoſe eſſential properties of ſound, gravity and acuteneſs; which is the more to be wondered at, ſeeing that in the writings of the ancients the terms Acumen and Gravitas are perpetually occuring, whereas the modern ſcale is ſo adjuſted, that thoſe ſounds, which in their own nature are comparatively grave or acute, have ſuch a ſituation in it, as does moſt preciſely diſtinguiſh them according to their ſeveral degrees of each; ſo that the graver ſounds have the loweſt, and the acuter the higheſt place in our ſcale. But here it may be aſked, does this diſtinction of high and low properly belong to ſound, or do we not borrow thoſe epithets from the ſcale in which we ſee them ſo poſited? It ſhould ſeem that we do not; for if we attend to the formation of ſounds by the animal organs, we ſhall find that the more grave are produced from the lower part of the larynx, as the more acute are from the higher; ſo that the difference between the one and the other ſeems to be more than ideal, and to have its foundation in nature: the modern muſicians ſeem however to pay a greater regard to this diverſity than is either requiſite or proper; for where is the neceſſity that in a vocal compoſition ſuch a ſentiment as this 'They that go down to the ſea in ſhips,' &c. ſhould be expreſſed by ſuch ſounds, as for the degree of gravity few voices can reach? much leſs can we ſee the reaſonableneſs of that precept which directs that the words Hell, Heaven, are invariably to be expreſſed, the one by a very grave, and the other by a very acute ſound. Thoſe who affect to be ſeverely critical on the compoſitions of this la-

	e	Nete, ſive ultima disjunctarum.
Tetrachordon	d	Paranete diezeugmenon, ſive ſecunda disjunctarum.
Diezeugm.	c	Trite diezeugmenon, ſive tertia disjunctarum.
	b	Parameſe, ſive vicina mediis.
Tetrachordon	d	Nete ſynemmenon, ſive ultima conjunctarum.
Synemmen.	c	Paranete ſynemmenon, ſive ſecunda conjunctarum.
	b	Trite ſynemmenon, ſive tertia conjunctarum.
	a	Meſe, id eſt media.
Tetrachordon	G	Lychanos meſon, ſive index mediarum.
Meſon	F	Parhypate meſon, ſive ſecunda mediarum.
	E	Hypate meſon, ſive gravis mediarum.
Tetrachordon	D	Lychanos hypaton, ſive index gravium.
Hypaton	C	Parhypate hypaton, ſive ſecunda gravium.
	B	Hypate hypaton, ſive gravis gravium.
	A	Proſlambanomenos, ſive vox aſſumpta.

ter

ter age, allow no greater merit to this ſort of analogy than is due to a pun, and their cenſure ſeems to be no more than the error will warrant.

The deſcription above given of the ancient muſical characters, is derived, through Boetius, from Alypius, the moſt copious and intelligible of all the Greek writers on this branch of muſic: his authority, ſo far as it goes, has been implicitly acquieſced in; and indeed from his teſtimony there can lye no appeal. The reader will naturally expect to be informed of the method by which the ancients denoted the different degrees in the length or duration of their muſical ſounds; but it ſeems they were ſtrangers to muſic merely inſtrumental: the lyre, and other inſtruments in uſe among them, was applied in aid of the voice; and the ode, or hymn, or pean, or whatever elſe the muſician ſung, determined by its meaſure, and the feet of the verſe the length of the ſounds adapted to it, and took away the neceſſity for ſuch marks or characters of diſtinction in this reſpect as are uſed by the moderns. Nor need we any farther proof of this aſſertion, than the abſolute ſilence of the Greek writers as to any method of denoting what we now underſtand by the Time or meaſure of ſounds. It is true that thoſe among the learned who have undertaken a tranſlation of ſome few remaining fragments of ancient muſic into modern notes, have, in particular inſtances, ventured to render the characters in the original by notes of different lengths; but it is to be preſumed they were determined ſo to do rather by the cadence of the verſe, than by any rythmical deſignation obſervable in any of thoſe characters. Mr. Chilmead, the publiſher of the Oxford edition of Aratus, and of Eratoſthenes de Aſtris, in octavo, 1672, has given at the end of it three hymns or odes of a Greek poet named Dionyſius, with the ancient muſical characters, which he has rendered by breves only; but Kircher, in his Muſurgia, tom. I. pag. 541, from a manuſcript in the library of the monaſtery of St. Salvator, near the gate of Meſſana in Sicily, has inſerted an ancient fragment of Pindar, with the muſical notes, which he has explained by the different ſigns of a breve, ſemibreve, crotchet, and quaver, as underſtood by us moderns. Meibomius alſo has given from an ancient manuſcript a Te Deum, with the Greek characters, and in modern notes, the former of which appear to be more ſimple and leſs combined than thoſe deſcribed by Boetius; which is the leſs to be wondered at conſidering

that St. Ambroſe, who is ſaid to have been the author of that hymn*, was conſecrated biſhop of Milan, A. C. 374, and Boetius flouriſhed not till about the year 500; ſo that there is a period of more than one hundred years, during which every kind of literature ſuffered from the rage of conqueſt that prevailed throughout all Europe, to induce a ſuſpicion that the Greek characters were not tranſmitted down to the time of Boetius uncorrupted. In the tranſlation of theſe muſical characters of the above-mentioned Te Deum, Meibomius has made uſe of the breve, the ſemibreve, and minim: upon what authority thoſe ſeveral modes of tranſlation is founded we do not pretend to determine; it ſeems that nothing is wanting to enable us to judge with certainty in this matter but a perfect knowledge of the powers of the ancient characters, with reſpect to the ſounds which they were intended to ſignify; and concerning theſe Kircher ſeems to have entertained no kind of doubt: he had acceſs to two manuſcripts of great antiquity, and his judgment of their authority, and the uſe that may be made of them he has given in the following words:

'The ancient muſical characters were no way ſimilar to thoſe of the 'moderns; for they were certain letters, not indeed the pure Greek 'ones, but thoſe ſometimes right, ſometimes inverted, and at others 'mutilated and compounded in various manners, each of which cha-'racters anſwered to one of the chords in the muſical ſyſtem. I 'laid my hands on two manuſcripts, which by God's mercy, were 'preſerved from the injuries of time, the one in the Vatican library, 'the other in ours of the Roman college: the author is Alypius; he, 'in order to give the harmonical characters of the ancients in great 'perfection, has exhibited with wonderful care every tone in the 'Octodecachord, according to the different genera. He keeps a 'twofold order in theſe ſeveral characters; the firſt as they were 'uſed in the Cantus; the ſecond as adapted to inſtruments, differing 'from the former almoſt after the ſame manner as at this day the 'notes of vocal muſic do from thoſe characters called by us the Tab-'lature, which are uſed only in inſtrumental muſic. Several writers,

* The Te Deum is commonly ſtiled the Song of St. Ambroſe, and it is ſaid that it was compoſed jointly by him and St. Auguſtine, upon occaſion of the baptiſm of the latter by St Ambroſe. Alliance of Divine Offices, by Hamon L'Eſtrange, folio, 1690, pag. 79 But archbiſhop Uſher aſcribes it to Nicetius, and ſuppoſes it not to have been compoſed till about the year 500, which was long after the time of Ambroſe and Auguſtine. Ibid.

'not

'not understanding this order of Alypius, have considered this two-
'fold series as a single one: among these are Liardus, and Solomon
'de Caux, who has followed him, both of whom have given to the
'world most false and corrupted specimens of antient music. Aly-
'pius wrote an entire volume on the musical characters or notes,
'which, together with other manuscripts of the old Greek musicians,
'remain preserved in the library of the Roman college: a translation
'of this volume into the Latin language, I will, with the permission
'of God, at a convenient opportunity give to the learned world; in
'the interim I trust I shall do a favour to posterity by exhibiting a
'specimen of the characters in the order in which they lie in the
'manuscript, correcting from the interpretations thereto annexed
'such errors as I found required it *.'

The specimen, the whole of which seems by his account to be taken from Alypius, contains the characters through all the fifteen tones in the diatonic and chromatic genera in two separate tables, and is as follows.

* It seems by this that Alypius had not been published in Kircher's time; and though he here promises to give the world a translation of it, there is no other extant than that very correct one of Meibomius Kircher expresses a confidence that by publishing these characters he should confer an obligation on the learned world, but the manner in which he has done it furnished a ground of censure to Meibomius, which he delivers in very bitter terms in the preface to his edition of the Greek writers.

	Notæ et Characteres musici veterum iuxta Diaton Genus	Charact Toni Lydij	Charact Toni Hypoly	Charact Toni Hyperly	Charact Toni Æolij	Charact Toni Hypoæo	Charact Toni Hyperæo	Charact Toni Phrygij	Charact Toni Hypophry	Charact Toni Hypphry	Charact Toni Iastij	Charact Toni Hypoias	Charact Toni Hypias	Charact Toni Dorij	Charact Toni Hypodo	Charact Toni Hyperdo
		Vox. Instr	Vox. Instr	Vox. Instr	Vox. Instr	Vox. Instr	Vox. Instr	Vox. Instr	Vox. Instr	Vox. Instr	Vox. Instr	Vox. Instr	Vox. Instr	Vox. Instr	Vox. Instr	Vox. Instr
aa	Νητη ὑπερβολαιων	I λ	θ N	⊔ ʒ	K ∂′	ʒ ⊏	α \	M ⊓	⊔ ʒ	Γ′ N	O K	α \	ʒ ⊏′	⊥ ∠	Γ N	H Y
g	Υπερβολαιων διατονος	M ⊓	⊔ ʒ	Γ N	O K′	⋇ λ	ʒ ⊏	⊥ Y	Γ N	H λ′	θ ϟ	ʒ ⊏	I ⋖′	B /	H λ	K λ
f	Τριτη ὑπερβολαιων	Λ ϙ	E ⊔	θ ⋖	θ H	α \	I ⋌′	⋔ Λ	θ ⋖	λ O′	⊔ ʒ	I ⋖	ξ′ ⋎′	Γ N	λ ⋖	O′ K′
e	Νητη διεζευγμενων	θ H	ʒ ⊏	I ⋌	⋇ α	H Y	K λ	⊔ ʒ	I ⋌	⋔ O	α \	K λ	O ⋎′	H ⋌	M ⊓	⊥ ⊂
d	Διεζευγμενων διατονος	⊔ ʒ	I ⋌	M ⊓	α \	K λ	O K′	Γ N	M ⊓	M ⊓′	ʒ ⊏	O K	θ H	λ ⋖	π ⊃	⋇ λ
c	Τριτη διεζευγμενων	E ⊔	ξ ⋎	π ∠	ʒ ⊏	O K	θ H	θ ⋌	ϱ ⊍	⊥ ⊍	I ∠	C C	⊔ ʒ	M ⊓	⊍ ⊔	B /
♮	Παραμετη	ʒ ⊏	O K	θ H	H Y	π ⊃	⋇ λ		C C	⊔ ʒ	K λ	T ⊣	α /	H >	Φ F′	Γ N
c	Νητη συννημενων	⊔ ʒ	I ⋌	M ⊓	α \	K ∂	O K′	Γ H	M ⊓		ʒ ⊏	C C	θ ϟ	K ∠	π ⊃	⋇ λ
♮	Συννημενων διατονος	Γ N	M ⊓	⊥ ∠	ʒ ⊏	O K	θ ϟ	H ⋌	ϖ ⊃	⋇ λ	I ∠	Φ F	⊔ ʒ	O K	T F	α \
b	Τριτη συννημενων	θ ⋌	ϱ ⊍	⋔ C	I ⋌	C C	⊔ ʒ	λ ∠	⋎ ⊔	B /	ξ ⋎	X ω	E ⊔	π ⊃	≥	ʒ ⊏
a	Μεση	I ⋌	C C	⊔ ʒ	K ∂	T ⊣	α \	M ⊓	Φ F	Γ N	O K	ξ ⋎	ʒ ⊏	T ⊣	ω ω	H >
G	Μεσων διατονος	M ⊓	Φ F	Γ N	O K	X ⊔	ʒ ⊏	π ⊃	ω ⊍	H >	C C	⊓ Γ	I ⋖	Ψ ⊇	⋈ ⊣	K λ
F	Παρυπατη μησων	ϱ ⊍	B L	θ ⋌	C C	⊓ Γ	I ⋌	⋎ ⊔	F ⊥	λ ⋌	Φ F	ʒ ⊢	ξ ⋎	ω ⊔	T ⊔	O K
E	Υπατη μεσων	C C	⊓ Γ	I ⋌	T ⊣	⋈ ⊣	K ∂	Φ F	ʒ ⊢	M ⊓	X ω	H ∃	O K	⋈ ⊣	\ E	π ⊃
D	Υπατων διατονος	Φ F	ξ ⊢	M ⊓	X ⋎	H ∃	O K	ω ⊔	\ E	π ⊃	⊓ Γ	W H	C C	⋔ ⊔	И ⊓	T ⊣
C	Παρυπατη υπατων	R L	∀ I	ϱ ⊍	⊓ Γ	W H	C C	F ⊥	ω H	⊍ ⊔	ʒ ⊢	ϙ H	Φ F	K ∠	δ ⊍	Ψ ⊇
♮	Υπατη υπατων	⊓ Γ	W H	C C	⋈ ⊣	И ⊓	T F	< ⊢	ϙ H	Φ F	H ∃	⊏ ⊃ ⊃	X ω	\ E	⊃ ⊂ ⊃ ⊂	ω ⊍
A	Προσλαμβανομενος	ʒ ⊢	ϙ H	Φ F	H ∃	⊔ ⊃	X ⊔	ʒ \ E	⊃ ⊂ ⊃ ⊂	ω ⊍	W ⊔	⊣ T	⊓ Γ	N ⊓	⊇ ⊇	⋈ ⊣

Notæ et Characteres musici veterum iuxta Diaton Genus	*Charact Toni Lydij*	*Charact Toni Hypoly*	*Charact Toni Hyperly*	*Charact Toni Æolij*	*Charact Toni Hypoæo*	*Charact Toni Hyperæo*	*Charact Toni Phrygij*	*Charact Toni Hypophry*	*Charact Toni Hypphry*	*Charact Toni Iastij*	*Charact Toni Hypoias*	*Charact Toni Hypias*	*Charact Toni Dorij*	*Charact Toni Hypodo*	*Charact Toni Hyperdo*
	Vox. Instr	*Vox. Instr*	*Vox. Instr*	*Vox. Instr*	*Vox. Instr*	*Vox. Instr*	*Vox. Instr*	*Vox. Instr*	*Vox. Instr*	*Vox. Instr*	*Vox. Instr*	*Vox. Instr*	*Vox. Instr*	*Vox. Instr*	*Vox. Instr*
Νητη ὑπερβολαιων	ΙΛ	ΘΗ	⊔Ζ	ΗΛ	⋇Λ	ά\	ΜΠ	⊔Ζ	ΓΝ	ΟΚ	α/	ΖΓ	⊥∪	ΓΝ	ΗΛ
Παρανητη ὑπερβολαιων	⊥C	ΔΓ	Η>	⊥σ	ΔΓ	Η7	⋇Λ	Η>	Κ7	⋇Λ	Η7	ΝϏ	α\	ΚΛ	ΝϏ
Τριτη ὑπερβολαιων	ΛC	Ε⅃	ΘΛ	ΘΗ	Ζ⊏	Ι<	ΛC	ΘΧ	ΛΛ	⊔Ζ	ΙΛ	ξ>	Β/	ΛΛ	ΟΚ
Νητη διεζευγμενων	ΘΗ	Ζ⊏	ΙΛ	⋇Λ	Η>	Χ^	⊔Ζ	Ι∠	ΜΠ	α\	ΗΛ	ΟΚ	ΓΗ	ΜΠ	⊥∠
Παρανητη διεζευγμενων	ΔΓ	ΝϏ	⊥<	ΔΤ	ΗϏ	⊥C	Η7	Π⅁	⋇Λ	Η7	Π⅁	⋇Λ		ΤΤ	α/
Τριτη διεζευγμενων	Ε⅃	ξ>	ΠC	Ζ⊏	ΟΗ	ΘΗ	ΘΧ	ϱ∪	ΛΧ	ΙV	CC	⊔Ζ	Κ^	∪Ш	Β/
Παραμεσος	Ζ⊏	ΟΚ	ΘΗ	Η>	Π⅁	⋇Λ	Ι∠	CC	⊔Ζ	ΚΛ	ΤΤ	α\	ΜΠ	ΘⅢ	ΓΝ
Νητη συνημενων	⊔Ζ	Ιχ	ΜΠ	α\	ΗΛ	ΟΚ	ΓΝ	ΜΠ	⊥C	Ζ⊏	ΟΚ	ΘΗ	Η7	Π⅁	⋇>
Παρανητη συνημενων	ΗΝ	Π⅁	⋇Λ	Η7	Π⅁	⋇Λ	ΚΛ	ΤΤ	α\	ΝϏ	ΤΤ	Δ⅁	ΝϏ	ΧΡ	Δ⅁
Τριτη συνημενων	ΘΧ	ϱ∪	Λ~	Ι⊀	CC	⊔Ζ	ΛΛ	∪Ш	Β/	ξ>	ΦF	Ε⅃	Ο×	Ϟ	Ζ⊏
Μεση	Ι∠	CC	⊔Ζ	ΚΛ	ΤΤ	α\	ΜΠ	ΘF	ΓΜ	ΟΚ	ΧΡ	Ζ⊏	Π⅁	ΩⅢ	ΗΖ
Λιχανος μεσων	ΠϏ	ϱΕ		Π⅁	ϱΕ	Η7	ΤΤ	ϒΗ	ΚΛ	ΤΤ	ϒΗ	ΝϏ	ΧΜ	Η⅁	ΝϏ
Παρυπατη μεσων	ϱ∪	RL	ΘΧ	CC	ΓΓ	Ι7	∪Ш	F⅃	ΛΥ	ΦF	Ζ⊦	ξ>	Ϟ	ΤΩ	ΟΚ
Υπατη μεσων	CC	ΓΓ	Ι⊀	ΤΤ	ϒΗ	ΚΔ	ΦF	Ζ⊦	Μ7	ΧЧ	И⅁	ΟΚ	ΩⅢ	\Ε	Π⅁
Λιχανος ὑπατων	ϱΕ	ϰΗ	Π⅁	ϱΕ	ϰΜ	Π⅁	ϒΗ	ИΑ	ΤΤ	ϒΗ	ИΑ	ΤΤ	Η⅁	Ш⅄	ΧΩ
Παρυπατη ὑπατων	ΒL	ΥΕ	ϱC	ΓΓ	WH	CC	F⊥	ωΗ	CⅢ	Ζ⊦	ϱΚ	ΦF	Ϟ		Ϟ
Υπατη υπατων	ΓΓ	Wh	CC	∂Η	ИΑ	ΤΤ	⊀⊦	ϱИ	ΦF	Ч⅁	Β⅄	ΧИ	\Ε	ϐυυ	ωΡ
Προσλαμβανομενος	ζ⊦	ϱΗ	ΦF	Η⅁	Ш⅄	ΧЧ	\Ε	⅄Ε	ωΡ	Wh	ΗΤ	ΓΓ	ΚΑ	Εe	ϒΗ

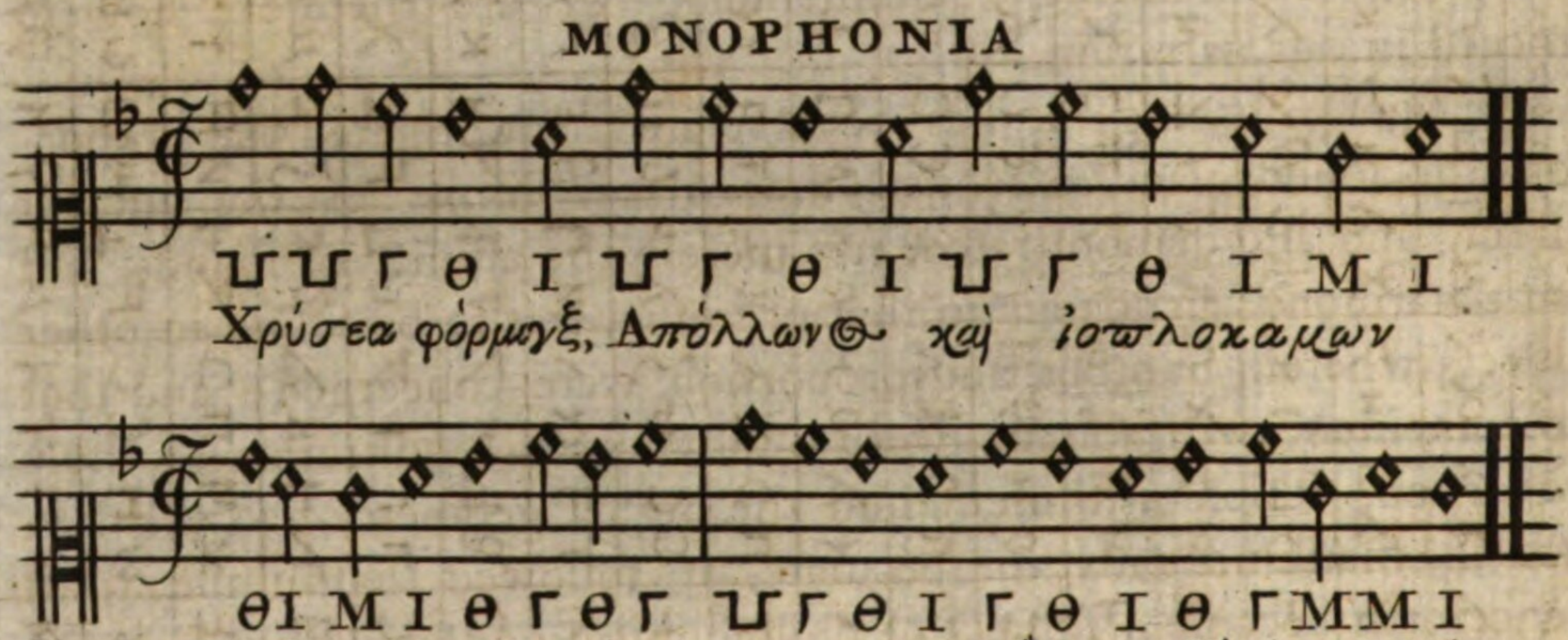
Kircher gives the following explanation of the above characters.

The top of the plate contains the names of the fifteen tones or modes: the ſide exhibits eighteen chords, anſwering to every tone, and expreſſed by their Greek names, to each of which the Guidonian keys now uſed by the Latins anſwer, in the firſt column. To know therefore for inſtance by what characters the ancients expreſſed the Meſe in the Phrygian tone, we muſt look in the ſide for the chord Meſe, and on the top for Tonus Phrygius, and where they meet we ſhall find the character ſought for, and ſo for the reſt.

Having exhibited this key to the ancient characters, Kircher gives the fragment of Pindar above-mentioned in the Greek notes, and alſo in thoſe of the modern ſcale, as here under is repreſented.

54

MONOPHONIA



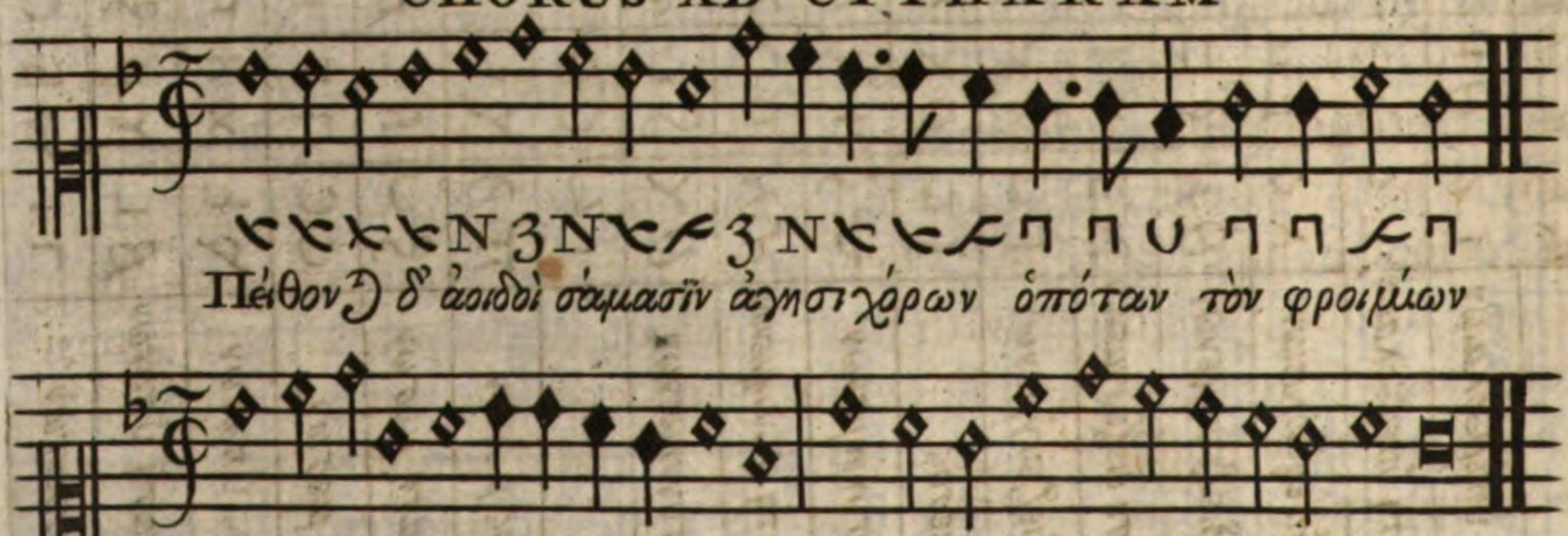
ΠΠΓθΙΠΓθΙΠΓθΙΜΙ

Χρύσεα φόρμιγξ, Απόλλωνος καὶ ἰοστεφάνων

θΙΜΙθΓθΓΠΓθΙΓθΙθΓΜΜΙ

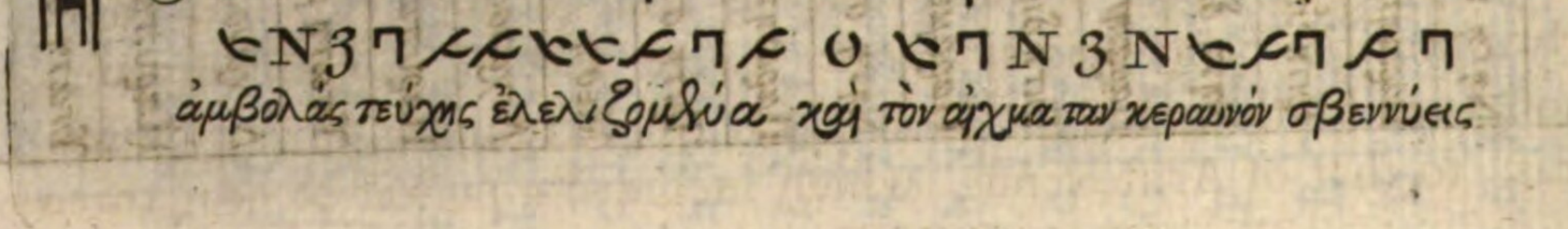
Σωδικον μοισᾶν κτέανον τας ακυμβάσις ἀβλαβίας ἀρχά·

CHORUS AD CYTHARAM



ϵϵϰϵΝϽΝϵϝϽΝϵϵϝϩϩυϩϩϝϩ

Πείθονϑ δ' ἀοιδοὶ σάμασιν ἀγησιχόρων ὁπόταν τὸν φροιμίων



ϵΝϽϩϝϝϵϵϝϩϝυϵϩΝϽΝϵϝϩϝϩ

ἀμβολάς τεύχις ἐλελιξομένα καὶ τὸν ἀρχμα των κεραυνόν σβεννύεις

And the table herein before given from him ſeems to have been his authority for rendering the ancient characters in modern notes, as above is ſhewn. By way of illuſtration he adds, that the Chorus vocalis above contains the characters written over each word; and that the Chorus inſtrumentalis, which is nothing elſe but the antiſtrophe to the former, was played according to the ſtrophe, on the cythara or the pipe. As the characters agree with thoſe of Alypius, he ſays he has no doubt about their meaning; and as to the time, he is clear that it was given by the meaſures of the ſyllables, and not by the characters.

The ſeveral variations of the ſyſtem of muſic have been traced with as much accuracy as the nature of the ſubject would allow of: the improvements made by Terpander and others, more eſpecially Pythagoras, have been diſtinctly enumerated, we are therefore now to proceed in our narration.

Pythagoras having, as has been related, inveſtigated the proportions of ſounds, and extended the narrow limits of the ancient ſyſtem, and alſo demonſtrated, not merely the affinity of ſounds, but that a harmony, analogous to that of muſic, was to be found in other ſubjects wherein number and proportion were concerned; and that the coincidences of ſounds were a phyſical demonſtration of thoſe proportions which arithmetic and the higher geometry had till then enabled mankind only to ſpeculate, it followed that muſic from thenceforth became a ſubject of philoſophical contemplation. Ariſtotle, by ſeveral paſſages in his writings now extant, appears to have conſidered it in this view: it is even ſaid that he wrote a treatiſe profeſſedly on the ſubject of muſic, but that it is now loſt.

Fabricius has given a catalogue of ſundry writers, as namely, Jades, Laſus Hermionenſis, Mintanor, Diocles, Hagiopolites, Agatho, and many others, whoſe works are loſt; and in the writings of Ariſtoxenus, Nicomachus, Ptolemy, Porphyry, Manuel Bryennius, and other ancient authors, we meet with the names of Philolaus, Eratoſthenes, Archytas of Tarentum, and Didymus of Alexandria, who ſeem moſtly to have been philoſophers; but as they are alſo enumerated among the ſcriptores perditi, nothing can be ſaid about them. In thoſe early times the principles of learning were very ſlowly diſſeminated among mankind; and it does not appear, that from the time of Pythagoras, to that of Ariſtoxenus, which included a period of near three hundred

hundred years, the muſic of the ancients underwent any very conſiderable alteration, unleſs we except that new arrangement and ſubdiviſion of the parts of the great ſyſtem, which conſtituted the Genera, and thoſe diſſimilar progreſſions from every ſound to its diapaſon, which are diſtinguiſhed by the name of Modes. Of theſe it is neceſſary now to ſpeak; and firſt of the Genera.

Till the time of Pythagoras, the progreſſion of ſounds was in that order, which as well the modern as the ancient writers term the diatonic, as proceeding by tones, a progreſſion from the uniſon to its fourth by two tones and a hemitone, which we ſhould now expreſs by the ſyllables DO, RE, MI, FA, confeſſedly very natural and extremely grateful to the ear; though it ſeems not ſo much ſo as to hinder ſucceeding muſicians from ſeeking after other kinds of progreſſion; and accordingly by a different diviſion of the integral parts of each of the tetrachords, they formed another ſeries of progreſſion, to which, from the flexibility of its nature they gave the epithet of Chromatic, from Chroma, a word ſignifying colour; and to this they added another, which was termed enarmonic; beſides this they invented a ſubvariation of each progreſſion, and to diſtinguiſh the one from the other they made uſe of the common logical term genus, by which we are to underſtand, as Kircher tells us, tom. I. lib. III. cap. xiii. a certain conſtitution of thoſe ſounds that compoſe a diateſſaron, or muſical fourth; or, in other words, a certain relation which the four chords of any given tetrachord bear to each other. The Genera are elſewhere defined, certain kinds of modulation ariſing from the different diſpoſition of the ſounds in a tetrachord: every Cantus or compoſition, ſays Ariſtoxenus *, is either Diatonic, Chromatic, or Enarmonic; or it may be mixed, and include a community of the genera. Ariſtoxenus, for ought now diſcoverable, is the firſt that has written profeſſedly, though obſcurely, on this part of muſic. Ptolemy, as he is in general the moſt accurate and methodical of all the ancient writers, ſo is he more copious in his explanation of the Genera. Nicomachus has mentioned them, but in a very ſuperficial manner; and as to the latter authors, we are not to wonder if they have contented themſelves with the bare enumeration of them; ſince before the times in which the greater number of them wrote, the Diatonic was the only one of the three genera in common uſe.

* Lib. II. pag. 44. ex Verſ. Meibom.

Nor does it any where appear, that even of the five Species, into which that Genus was divided, any more than one, namely, the ſyntonous or intenſe of Ptolemy, was in general eſtimation. It muſt be confeſſed that no part of the muſical ſcience has ſo much divided the writers on it as this of the genera; Ptolemy has exhibited no fewer than five different ſyſtems of generical harmony, and, after all, the doctrine on this ſubject is almoſt inſcrutable: however, the ſubſtance of what theſe and other authors have related concerning the nature of it, is here, as in its proper place, referred to the conſideration of ſuch as are deſirous to know the eſſential difference between the muſic of this and the more early ages.

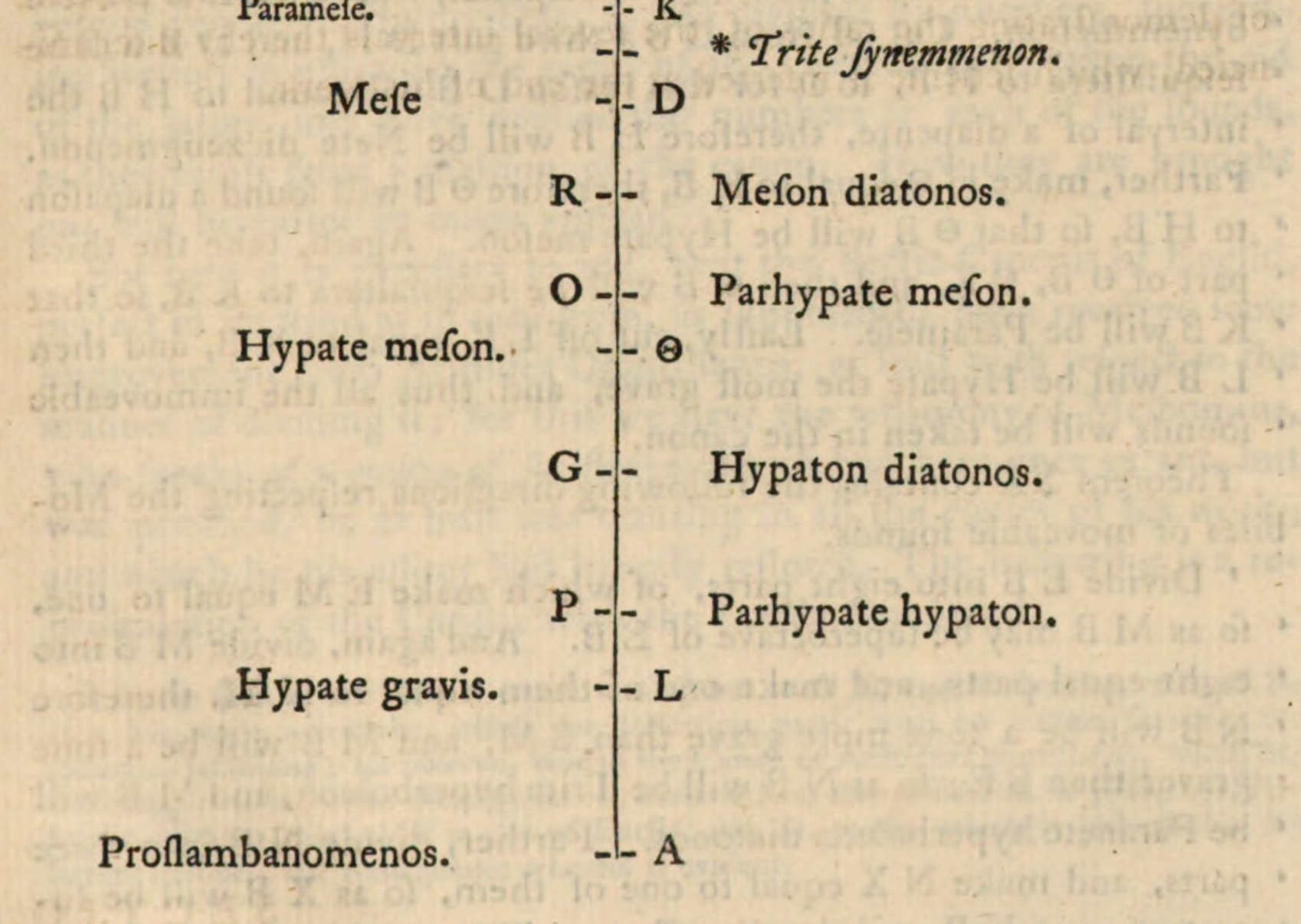
But before this doctrine of the Genera can be rendered to any degree intelligible, it is neceſſary to obſerve, that hitherto we have ſpoken only of the more common and obvious muſical intervals, the tone and hemitone; for the ſyſtem of Pythagoras is formed of theſe only; and a more minute diviſion of it was not till after his time thought on, nevertheleſs it is to be noted, that in order to the completion of his ſyſtem, it was found requiſite to inſtitute a method of calculation that ſhould as it were reſolve the intervals into their elements, and adjuſt the ratios of ſuch ſounds as were not determinable by the diviſion of a chord in the manner herein before-mentioned. That diviſion was ſufficient, and it anſwered to the greateſt degree of mathematic exactneſs for aſcertaining the ratios of the diateſſaron, the diapente, and the tone: and, agreeable to what has been already laid down concerning the inveſtigation of the conſonances by Pythagoras, it will moſt evidently appear upon experiment, that if a chord be divided into twelve equal parts, ſix of thoſe parts will give an octave to that ſound which would have been produced by the ſame chord, if ſtruck before ſuch diviſion; from whence it appears, that the ratio ſubſiſting between the uniſon and its octave is duple: again, that eight parts of the twelve will give a diateſſaron, which bears to the uniſon ſix a ratio of 4 to 3; and that nine parts, according to the ſame diviſion, will produce the diapente, which bears to the uniſon ſix a ratio of 3 to 2; and laſtly, that the ſound produced at the ninth part will be diſtant from that at the eighth, and ſo reciprocally; a tone, in the ratio of 9 to 8, called a Seſquioctave, and often the Diezeuctic tone, which furniſhed the ear at leaſt with a common meaſure for the greater intervals.

But we are to note, that the ſyſtem of Pythagoras was not completed, till, by the very artful contrivance of two tetrachords, to be uſed alternately, as the nature of the melody might require, a diviſion of the tone between a and ♮ was effected. By this an interval of a Hemitone was introduced into the ſyſtem, with which no one ſection of the chord, ſuppoſing it to be divided into twelve parts, would by any means coincide: with great ingenuity therefore did Euclid invent that famous diviſion the Sectio Canonis, by means whereof not only the poſitions of the ſeveral ſounds on a ſuppoſed chord are preciſely aſcertained, but a method is ſuggeſted for bringing out thoſe larger numbers, which alone can ſhew the ratios of the ſmaller intervals, and which therefore make a part of every repreſentation that ſucceeding writers have given of the immutable ſyſtem.

The Sectio Canonis of Euclid is a kind of appendix to his Iſagoge, or Introductio Harmonica, containing twenty theorems in harmonics. Nevertheleſs the title of Sectio Canonis was by him given to the following ſcheme of a ſuppoſed chord, divided for the purpoſe of demonſtrating the ratios of the ſeveral intervals thereby diſcriminated, which ſcheme is inſerted at the end of his work.

SECTIO

SECTIO CANONIS OF EUCLID.



The foregoing canon or ſcheme of a diviſion is introduced by a ſeries of theorems, preparatory to an explanation of it, which explanation is

contained in Theorems XIX. and XX. the firſt of theſe refers to the immoveable ſounds, that is to ſay, Proſlambanomenos, and the other ſounds to the left of the line, and the latter to the moveable, which are Parhypate and the reſt on the right thereof; the ſum of which two ſpecies compoſed the great or immutable ſyſtem.

Theorem XIX. directs the adjuſtment of the canon for the Stabiles or immoveable ſounds, and that in the manner following.

'Let the length of the canon be A B, and let it be divided into four 'equal parts at G D E, therefore B A, as it will be the graveſt ſound, 'will be the ſonus bombus. Farther, A B is ſupertertius of G B, there- 'fore G B will ſound a diateſſaron to A B, towards the acumen, and 'A B is Proſlambanomenos; wherefore G B will be Hypaton Diato- 'nos. Again, becauſe A B is duple of B D, the former will ſound a 'diapaſon to the latter, and B D will be Meſe. Again, becauſe A B 'is quadruple of E B, E B will be Nete Hyperboleon; therefore G B 'is divided twofold in Z, and G B will be duple of Z B, ſo as G B 'will ſound to Z B the interval of a diapaſon, wherefore Z B is Nete 'Synemmenon. Cut off from D B a third part D H, and D B will be 'ſeſquialtera to H B, ſo as for this reaſon D B will ſound to H B the 'interval of a diapente, therefore H B will be Nete diezeugmenon. 'Farther, make H Θ equal to H B, therefore Θ B will ſound a diapaſon 'to H B, ſo that Θ B will be Hypate meſon. Again, take the third 'part of Θ B, Θ K, and then Θ B will be ſeſquialtera to K B, ſo that 'K B will be Parameſe. Laſtly, cut off L K equal to K B, and then 'L B will be Hypate the moſt grave, and thus all the immoveable 'ſounds will be taken in the canon.'

Theorem XX contains the following directions reſpecting the Mobiles or moveable ſounds.

'Divide E B into eight parts, of which make E M equal to one, 'ſo as M B may be ſuperoctave of E B. And again, divide M B into 'eight equal parts, and make one of them equal to N M, therefore 'N B will be a tone more grave than B M, and M B will be a tone 'graver than B E; ſo as N B will be Trite hyperboleon, and M B will 'be Paranete hyperboleon diatonos. Farther, divide N B into three 'parts, and make N X equal to one of them, ſo as X B will be ſu- 'pertertius of N B, and the diateſſaron will be produced towards the 'grave, and X B will be Trite diezugmenon. Again, taking half of 'X B, make X O equal to it, ſo as for this reaſon O B will give a

'diapente

' diapente to X B, wherefore O B will be Parhypate meſon; then
' make O P equal to O B *, ſo as P B will be Parhypate hypaton.
' Laſtly, take the fourth part of G B, G R, and R B will be Meſon
' diatonos.

CHAP. V.

THE Sectio Canonis of Euclid, in the judgment of the moſt eminent writers on harmonics, was the firſt eſſay towards a determination of the ratios by the ſuppoſed diviſion of a chord; and, aſſuming the proportions of the diapaſon, diapente, diateſſaron, diezeuctic tone, and limma, as laid down by the Pythagoreans, the diviſion will be found to anſwer to the ratios: yet this does not appear by a bare inſpection, but can only be proved by an actual admeaſurement of the ſeveral intervals contained in the canon. Now as whatever is geometrically diviſible, is alſo diviſible by numbers, ſucceeding writers in aſſigning the ratios of the intervals have taken the aid of the latter, and have applied the numbers to each of the ſounds, as they reſult from a diviſion of the canon. How they are brought out will hereafter be made appear.

But here it is neceſſary to add, that the Sectio Canonis of Euclid, perfect in its kind as it may ſeem, is ſuppoſed to have received ſome improvement from Ariſtides Quintilianus, at leaſt with reſpect to the manner of dividing it; for this we have the teſtimony of Meibomius, who ſpeaks of a canon of Ariſtides, which had been once extant, but was periſhed, or at leaſt was wanting in all the copies of his work; and which he his editor had happily reſtored. The following is a repreſentation of the Canon, with the numbers annexed.

* In the Canon O P is not equal to O B but to O X, and Meibomius, with all his care, has made a miſtake, which the following page, to go no farther, furniſhes the means of rectifying; for obſerve, that in the Canon of Ariſtides Quintilianus, which has the numbers to it, Trite diezeugmenon, marked X in that of Euclid, is 3888, and Parhypate hypaton marked P in that of Euclid alſo, is 7776, which is juſt double the former number, the conſequence whereof is evident.

		B
Nete hyperboleon.	- -	D. 2304.
Hyperbol. diatonos.	- -	l. 2592.
Trite hyperboleon.	- -	m. 2916.
Nete diezeugmenon.	- -	G. 3072.
Nete ſynemmenon.	- -	F. 3456.
& diezeugm. diatonos.		
Trite diez. & Syn. diat.	- -	n. 3888.
Parameſos	- -	l. 4096.
Trite ſynemmenon.	- -	o. 4374.
Meſe	- -	C. 4608.
Meſon diatonos.	- -	P. 5184.
Parhypate meſon.	- -	q. 5832.
Hypate meſon.	- -	H. 6144.
Hypaton diatonos.	- -	E. 6912.
Parhypate hypaton.	- -	r. 7776.
Hypate hypaton.	- -	K. 8192.
Proſlambanomenos.	- -	A. 9216. *

It

It does not appear whether the numbers were originally part of the canon, or whether they were inſerted by Meibomius. However, from ſeveral paſſages in Ptolemy, particularly in Book I. Chap. 10, where he demonſtrates the ratio of the limma, we meet with the number 2048, which is the half of 4096, 1944, the half of 3888, and others, which ſhew the antiquity of this method of numerical diviſion.

The following is an explanation of the canon as given by Meibomius, in his notes on Ariſtides Quintilianus, page 312, et ſeq.

'The ſtanding ſounds are firſt ſet down in the diviſion of the canon, 'and after them the moveable ones; we have marked the ſtanding 'ſounds by capital letters, and to theſe are added the moveable ones. 'The Hypaton diatonos and the reſt are marked by the ſmall letters. 'They are thus to be taken.

'I. Proſlambanomenos, A B, which is the whole length of the 'chord or line.

'II. Meſe, C B, half thereof.

'III. Nete hyperboleon, D B, the fourth part of the whole 'chord.

'IV. Hypaton diatonos, E B, three fourths thereof.

'V. Nete ſynemmenon, F B, the ſaid three ſourths, E B, di-'vided into two equal parts.

'VI. Nete diezeugmenon, G B, two thirds of half the chord, 'that is one third of the whole chord; but this may be perceived by 'multiplying an half by two thirds, thus, $\frac{1}{2}\ \frac{2}{3}\,|\,\frac{1}{3}$.

* The diviſion of Euclid agrees with that of Ariſtides as to the manner of obtaining the ſtanding, but differs as to ſome of the moveable chords, for Euclid finds the Trite diezeugmenon, by ſetting off towards the grave a diateſſaron from the Trite hyperboleon; he next finds the Parhypate meſon, by ſetting off towards the grave a diapente from the Trite diezeugmenon, which might be eaſier found by ſetting down a diapaſon from the Trite hyperboleon. He alſo finds the Parhypate hypaton by making O P equal to O X, that is by ſetting off a diapaſon towards the grave from the Trite diezeugmenon, for he had made O X equal to half X B, and conſequently twice O X O P muſt be equal to X B. And laſtly, he finds the Meſon diatonos by ſetting off a diateſſaron towards the acute from the Hypaton diatonos, whereas all the four ſounds, as well as the other moveable ones, are found in Ariſtides, by a diviſion into eight parts, that is by ſetting off ſeſquioctave tones. It ſeems, however, upon the whole, that Ariſtides followed the diviſion of Euclid, but neither of theſe can anſwer to the Ariſtoxenian principles, for this reaſon, that the Sectio Canonis both of Euclid and Ariſtides refer to thoſe arithmetic and harmonic ratios, which are diſcernable in the proportions of Pythagoras, whereas Ariſtoxenus rejected the criterion of ratios, and maintained that the meaſure of intervals was determinable by the ſenſe of hearing only.

'VII.

'VII. Hypate meſon, H B, two thirds of the whole chord, or 'the two thirds, G B, of the half chord twice ſet off, which chord 'therefore we take in the opening of the dividers, and ſet off twice.

'VIII. Parameſos, I B, (one third I H, being taken out of the 'two thirds H B of the whole chord) is two thirds of two thirds 'of the whole.

'IX. Hypate hypaton, K B; two thirds I B. of the two thirds 'H B twice ſet off.

'In order to aſſume the leſſer intervals, the following method 'muſt be made uſe of.

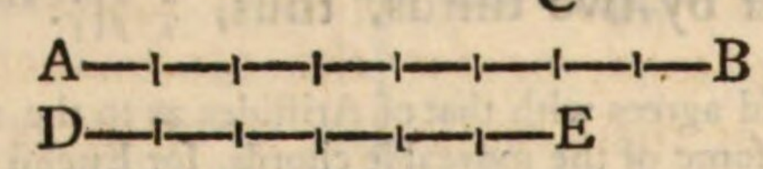
'I. The fourth part D B of the whole chord being divided into 'eight equal parts, I ſet off l below D equal to one of thoſe parts, 'and l B will be Paranete hyperboleon.

'II. Trite hyperboleon m B is aſſumed in the ſame manner, viz. 'by dividing the line l B into eight equal parts, and taking l m equal 'to one of them out of l A.

'III. Trite diezeugmenon, and the following moveable ſounds, 'are eaſily to be aſſumed in the ſame manner.'

Beſides the foregoing explanation of the canon, Meibomius has given the following, which he calls a Notable Theorem, and ſays of it that it is very uſeful in facilitating the ſection of the canon.

'The difference between two lines that are to each other in a ſeſ- 'quitertia ratio, being divided into two equally, will give the eighth 'part of the greater line.



'A B is ſeſquitertia to D E; C B is the exceſs of A B above D E, 'C B divided into two equally will exhibit the eighth part of A B.

'We ſhall ſee the ſame in the ſection of our canon. Let the line 'G B be divided into eight equal parts, I ſay the part G D thereof 'will contain two eighth parts; ſo that this need only be divided 'into two equally, as appears by this following demonſtration; for 'as G B is ſeſquitertia to D B, that is as 4 to 3, if G B be divided 'into twice four parts, that is eighths, D B will contain ſix of thoſe 'eighths, and conſequently D G two eighths, and its half will contain 'one eighth. Alſo if F B is to be divided into eight equal parts, its

'part F l need be divided only into two equally, in order to have one 'eighth part, which I ſet off from F to n, to find the exceſs of the 'tone above F B. The ſame method may be uſed in the follow-'ing ones.

'Moreover, the Meſon diatonos, and the other two moveable 'chords may alſo be obtained by the following method, namely, 'Meſon diatonos, by ſetting off the part l B, twice from B; Parhy-'pate meſon, by ſetting off the part m B, twice; Parhypate hypa-'ton, by ſetting off the part n B, twice.

'But whatſoever is here ſhewn in lines may, by the ingenuity of 'the intelligent reader, be eaſily applied in finding out the numbers.'

The canon of Ariſtides Quintilianus, with the numbers affixed, ſuppoſes the whole chord to contain 9216 parts, and being ſtruck open, to produce the moſt grave ſound of the ſyſtem, viz. A; the interval then of a tone at □, the next ſound in ſucceſſion, as being in the proportion of 8 to 9 to A, will require that the chord be ſtopped at 8192; and, ſuppoſing it to anſwer, we may with the utmoſt propriety ſay, that the ratio of a tone is as 9216 is to 8192, or in other words, that □ is produced at 8192 of thoſe parts whereof the chord A, contains 9216; and theſe two numbers will be found to bear the ſame proportion to each other as thoſe of 9 and 8. Again, for the diapaſon a, the number is 4608, which is juſt the half of 9216, as 6 is the half of 12; for the diateſſaron D, the number is 6912, which is three fourths of 9216; and for the diapente E, the number is 6144, which is two thirds of 9216. Hence it appears that the numbers thus taken for the tone, or for the conſonances of the diateſſaron and the diapente, or their replicates, as often as it may be thought neceſſary by the reiteration of an octave, or any leſs ſyſtem, to extend that of the biſdiapaſon, anſwer in like manner to the ratios of 9 to 8, 6 to 12, 12 to 9, and 12 to 8, in the primitive ſyſtem.

Theſe proportions we are told will be the reſult of an actual diviſion of a ſtring, which whoever is deſirous of making the experiment, is hereby enabled to try; though, by the way, it is ſaid by Meibomius that for this purpoſe one of two ells in length will be found neceſſary. Nevertheleſs, by the help of the principles already laid down, namely, that the diapaſon has a ratio of 2 to 1, the diapente of 3 to 2, the diateſſaron of 4 to 3, and the tone of 9 to 8, which are to be conſidered as data that all harmonical writers agree

in, it is very eaſy, by means of arithmetic alone, to bring out the numbers correſponding to the intervals in the diatonic biſdiapaſon. Bontempi has given a very particular relation of the proceſs in an account of the method taken by the ancients for that purpoſe; and immediately after, an exhibition of that ſyſtem with the proper numbers in the following ſcale.

Tetrach. hyperb.	2304. Nete hyperboleon	aa			
	Tone				
	2592. Paranete hyperb.	g			
	Tone				
	2916. Trite hyperboleon	f			
	Hemitone				
Tetrach. diez.	3072. Nete diezeugmenon	e			
	Tone				
	3456. Paranete diezeug.	d	3456. Nete ſynemmenon	d	Tetrach. Synem.
	Tone				
	3888. Trite diezeugmenon	c	3888. Paranete ſynem.	c	
	Hemitone				
	4096. Parameſe	♮	4374. Trite ſynemmenon	b	
	Tone				
Tetrach. meſon	4608. Meſe	a	4608. Meſe	a	
	Tone				
	5184. Lychanos meſon	G			
	Tone				
	5832. Parhypate meſon	F			
	Hemitone				
Tetrach. hypat.	6144. Hypate meſon	E			
	Tone				
	6912. Lychanos hypaton	D			
	Tone				
	7776. Parhypate hypaton	C			
	Hemitone				
	8192. Hypate hypaton	♮			
	Tone				
	9216. Proſlambanomenos	A *			

* Bontemp. 97.

His

His deſcription of the proceſs is in theſe words: 'The numbers 'affixed to the ſeveral chords in the ſyſtem draw their origin from 'the ſeſquioctave proportion, which is the relation that the ſecond 'chord bears to the firſt; and, proceeding from the acute to the 'grave, the numbers will be found to be in the ratio of ſubſeſqui-'octave, ſubſeſquitertia, ſubſeſquialtera, and ſubduple. But to be 'more particular:

'As the third chord was to be the ſeſquioctave of the ſecond, and 'as the ſecond had not an eighth part, the ancients multiplied by 8, 'and ſet down the number produced thereby: if the fourth chord 'was to be the ſeſquitertia, they multiplied the numbers by 3; if 'it was to be ſeſquialtera the numbers were doubled; and if by 'chance there were any fractions, they doubled them again to find 'even numbers, and ſo they went on: but as all theſe operations 'belong to arithmetic, and of courſe muſt be known, there is no 'neceſſity to explain them farther.

'However, as all this is different from any practice in the modern 'muſic, in order that thoſe who are not perfectly verſed in arithme-'tic may underſtand the foundation of this ſcience, it will not be 'amiſs here to explain it. You muſt then know, that as har-'monic muſic was ſubordinate to arithmetic, the ancients ſhewed 'only the intervals by numbers ariſing from the meaſures they 'had found out by experiments upon the monochord.

'When they wanted therefore to demonſtrate in the conſtitution 'of the ſyſtem what chord was either double, or ſeſquialtera, or ſeſ-'quitertia, or ſeſquioctave to another by arithmetical numbers, they 'uſed multiplication, or the doubling of the numbers, in order that 'they might riſe by degrees one above the other. They began from 'the moſt acute chord, which is the Nete hyperboleon, going on as 'far as the Trite ſynemmenon; which operation is demonſtrated by 'the following columns of numbers.

	1	2	3	4	5	6
aa	8	64	192	576	1152	2304
g	9	72	216	648	1296	2592
f		81	243	729	1458	2916
e			256	768	1536	3072
d			288	864	1728	3456
c			324	972	1944	3888
♮			1024	2048	4096	
b				2187	4374 *	

'The method which they uſed in theſe multiplications and redu-
'plications was this; as g was to be ſeſquioctave of aa, and f ſeſqui-
'octave of g; and as g had not an eighth part, to find it they mul-
'tiplied aa and g by 8; from which multiplication the numbers of
'the ſecond order were produced, and they put down 81 ſeſquioctave
'of 72. As e was to be ſeſquitertia of aa, and had not a third part,
'they multiplied all the ſecond order by 3; from which multiplica-
'tion was produced tbe third order, and there came out the number
'256, ſeſquitertia of 192; in like manner d was found to be ſeſqui-
'tertia of g, and c of f.

'As ♮ was to be ſeſquitertia of e, and had not a third part, they
'multiplied all the third order by 3, from which was produced the
'fourth order, and there came out 1024, ſeſquitertia of 768; as b
'was to be ſeſquialtera of f, there came out fractions, to avoid
'which all the fourth order was doubled, and ſo the fifth order
'was produced; and there was the number 2187, ſeſquialtera of
'1458.

'In a word, give me leave to repeat again this operation, with
'common explications for thoſe who are quite unacquainted with
'the rules of arithmetic; by multiplying eight times 8 they had 64
'for aa; by multiplying nine times 8 they had 72 for g; and adding
'to 72 the number 9, they had 81 for f.

'The ſeſquitertia, which is nothing but the proportion 4 to 3, con-
'ſtituting the diateſſaron from e to aa, was produced by giving to aa
'three times 64, which made 192, and to e four times 64, which
'made 256.

* Bontemp. 98.

'That

'That of d to g was produced by giving to g three times the 'number 72, which made 216; and to d four times the ſame, 'which made 288.

'That of c to f was produced by giving to g three times 81, 'which made 243; and to c four times the ſame, which made 324.

'That of ♮ to e was produced by giving to e three times 256, 'which made 768; and to ♮ four times the ſame, which made '1024.

'The ſeſquialtera, which is nothing but the proportion 3 to 2, conſti- 'tuting the diapente from b to f, was produced by giving to f twice '729, which made 1458; and to b three times the ſame, which 'made 2187.

'Finally, in order that this kind of numbers might do for the 'chords of the chromatic and enarmonic genera; to avoid fractions 'they doubled all the fifth order, and thereby brought out the ſixth; 'ſo that the ſecond order is the produce of the firſt multiplied by 8; 'the third order is the produce of the ſecond multiplied by 3: the 'fourth order is the produce of the third multiplied by 3; the fifth 'order is double the fourth, and the ſixth double the fifth; and the 'numbers of the ſixth order are the ſame as thoſe of the tetrachords 'Hyperboleon, Diezeugmenon, and Synemmenon, in the foregoing 'ſcale.

'There is beſides theſe the Meſe, the number of which is 4608, 'which is the double of 2304, the number of the Nete hyperboleon, 'becauſe there is between the one and the other chord the interval of 'a diapaſon.

'The number 5184 of the Lychanos meſon is twice the number '2592 of the Paranete hyperboleon, becauſe there is between them 'the ſame interval of the diapaſon; and ſo the following numbers to- 'wards the grave are double to the numbers belonging to the acute 'chords, following from the Paranete hyperboleon in ſucceſſion; be- 'cauſe there is between them all, in their reſpective degrees, the uſual 'interval of the diapaſon. As the ſounds of the diatonic genus have 'their numbers, ſo likewiſe have the ſounds of the other genera num- 'bers, which are peculiar to them, except the Nete hyperboleon, the 'Nete diezeugmenon, the Nete ſynemmenon, the Parameſe, the 'Meſe, the Hypate meſon, the Hypate hypaton, and the Proſlamba- 'nomenos, whoſe numbers are common to all the genera, as their

'ſounds

'ſounds are fixed. Every thing relating to them may be ſeen in 'their reſpective ſyſtems.'

It is to be remembered, that it was for the purpoſe of explaining the doctrine of the genera that the foregoing enquiry into the proportions of the intervals was entered into; this inquiry reſpected the diatonic ſeries only, and the proportions thereby aſcertained are the diapaſon, diapente, diateſſaron, and tone; beſides theſe, another interval, namely, that whereby the diateſſaron exceeds the ditone, and which is generally ſuppoſed to be a ſemitone, for now we ſhall uſe the appellation given to it by the Latin writers, has been adjuſted, and in general ſhewn to have a ratio of 256 to 243.

But here it is neceſſary to mention, that the ratio of this interval was a ſubject of great controverſy with the ancient muſicians. What were the ſentiments of Pythagoras about it we are no where told; though if it be true that he conſtituted the diateſſaron in the ratio of 4 to 3, and made each of the tones contained in it ſeſquioctave, it will follow as a conſequence, that the interval neceſſary to complete that ſyſtem muſt have been in the ratio of 256 to 243: this is certain, that Boetius, and the reſt of the followers of Pythagoras, deny the poſſibility that it can conſiſt in any other: but this is a method of deduction by numerical calculation, and the appeal is made to our reaſon, which, in a queſtion of this nature, ſay ſome, has nothing to do.

The firſt who aſſerted this doctrine, and he has done it in terms the moſt explicit, was Ariſtoxenus, the diſciple and ſucceſſor of Ariſtotle; he taught that as the ear is the ultimate judge of conſonance, we are able by the ſenſe of hearing alone to determine the meaſure both of the conſonants and diſſonants, and that both are to be meaſured or eſtimated, not by ratios but by intervals *. The method he took was this, he conſidered the diapaſon as conſiſting of the two ſyſtems of a diateſſaron and diapente; it was eaſy to diſcover the difference between the two to be a tone, which was ſoon found, allowing the ear to be the judge, to be diviſible into ſemitones. Theſe two latter intervals being once recognized by the ear, became a common meaſure, and enabled him to determine the magnitude of any interval whatever, which he did by various additions to, and ſubductions from, thoſe above mentioned; in like manner as is practiſed by the fingers of

* Wallis Appendix de Veterum Harmonica, Quarto, pag. 290.

our

our times, who by an inſtantaneous effort of the voice, are able not only to utter a fourth, a fifth, a greater or leſſer third, a tone, a ſemitone, and the reſt, but by habit and practice are rendered capable of ſeparating and combining theſe intervals at pleaſure, without the aſſiſtance of any arithmetical proceſs or computation.

It muſt be confeſſed that there ſeems to be a kind of retrogradation in a proceſs which directs the admeaſurement of a part by the whole, rather than of the whole by a part, as this evidently does; but notwithſtanding this ſeeming irregularity, the adherents to the former method are very numerous.

The principles on which theſe two very different methods of judging are founded, became the ſubject of great contention; and might perhaps give riſe to another queſtion, as extenſive in its latitude, as important in its conſequences, namely, whether the underſtanding or the imagination be the ultimate judge of harmony and beauty; or, in other words, what are the peculiar offices of reaſon and ſenſe in ſubjects common to them both. The conſequence of this diverſity of opinions, ſo far as it related to muſic, was that, from the time of Ariſtoxenus the muſicians of earlier times, according as they adhered to the one or the other of theſe opinions, were denominated either Pythagoreans or Ariſtoxeneans, by which appellations the two ſects continued for a long time to be as much diſtinguiſhed as thoſe of the Peripatetics and Stoics were by their reſpective names*.

But it ſeems that as well againſt the one as the other of the poſitions maintained by the two parties, there lay ſtrong objections; for as to that of Pythagoras, that reaſon, and not the hearing, is to determine of conſonance and diſſonance, it was erroneous in this reſpect, it accommodated harmonical proportions to incongruous intervals; and as to Ariſtoxenus, he, by rejecting reaſon, and referring all to ſenſe, rendered the very fundamentals of the harmonical ſcience incapable of demonſtration. The ſeveral offices of reaſon and ſenſe, by which we are here to underſtand the ſenſe of hearing, are very accurately diſcriminated by Ptolemy, who undertook the taſk of reviewing this controverſy; and the method he took to reconcile theſe two militant poſitions will be ſhewn at large in that extract from his treatiſe, which we mean hereafter to exhibit in its proper place; the

* Porphyrii in Ptolemæi Harmonica Commentarius, Edit. Walliſii, pag. 189.

only

only queſtion at preſent to be diſcuſſed, is that relating to the meaſure of the diateſſaron. That it exceeded two of thoſe tones one whereof conſtituted the difference between the diapente and diateſſaron, was agreed by both parties; but the meaſure of this exceſs was the point in debate: the Pythagoreans aſſerted it to be an interval in the ratio of 256 to 243, to which, for want of a better, they gave the name of Limma; the Ariſtoxeneans, on the other hand, contended that it was neither more nor leſs than a ſemitone. The queſtion then became, Whether is the ſyſtem of a diateſſaron compounded of two tones and a limma, or of two tones and a ſemitone?

Ptolemy has entered into a very minute examination of this queſtion; and though he profeſſes to be, as he certainly is, an impartial arbiter between the two ſects, and is very free in his cenſures on each; yet has he moſt irrefragably demonſtrated the Pythagorean tenet to be the true one. The method he has taken to do it may be ſeen in the firſt book of his Harmonics, chap. x. but the following proceſs will enable any one to judge of the force of his reaſoning.

Let the number 1536, which it is ſaid is the ſmalleſt that will ſerve the purpoſe, be taken, and after that 1728, its ſeſquioctave, to expreſs a tone; and again, the ſeſquioctave of 1728, which is 1944, for another tone; the numbers 1536 and 1944 will then ſtand for the ditone. The diateſſaron is ſeſquitertian, or as 4 to 3, it is therefore neceſſary to ſeek a number that ſhall contain four of thoſe parts, of which 1536 is three, and this can be no other than 2048; ſo that the interval whereby the diateſſaron exceeds the ditone, is in the ratio of 2048 to 1944; or, in ſmaller numbers, as 256 to 243. But to judge of the magnitude of this interval, let the ſeſquioctave of 1944, 2187 be taken for a third tone; it will then remain to enquire the difference between the two ratios 2187 to 2048, and 2048 to 1944, and the former will be found the greater; for 2187 exceeds 2048 by more than a fifteenth, and by leſs than a fourteenth part; whereas 2048 exceeds 1944 by more than a nineteenth, and by leſs than an eighteenth; and conſequently that which, together with the ditone completes the diateſſaron, is the leſſer part of the third tone.

Salinas calls this demonſtration of Ptolemy an excellent one, as moſt undoubtedly it is, and in his Treatiſe de Muſica, lib. II. cap. xx. exhibits it in the following diagram.

DIATESSARON.

GREATER TONE. GREATER TONE. GREATER TONE.

APOTOME. LIMMA.

2187 2048 1944 1728 1536

To this leſſer part of the third tone 2048 to 1944, or in leſſer numbers, 256 to 243, was given the name of the Limma of Pythagoras; though ſome writers, and thoſe of the Pythagorean ſect, ſcrupled not to term it a Dieſis. The greater part of the tone reſulting from the above diviſion was termed Apotome, a word ſignifying the reſidue of what remains of a line after part has been cut off.

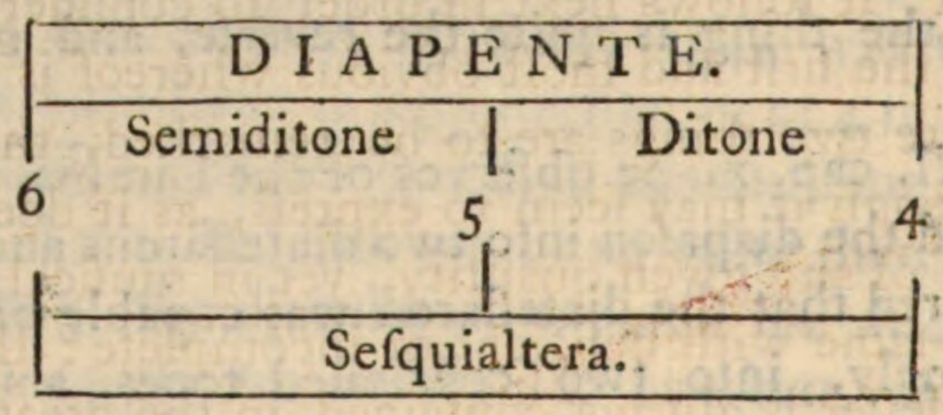
Salinas, lib. II. cap. xx. remarks, that both the theoretic and practical muſicians among the moderns are deceived in thinking that the Apotome of the ancients is that interval, which, in ſuch muſical inſtruments as the organ, and others of the like kind, is found between ♮ and b; or, in other words, that the interval between ♮ and b is greater than that between ♮ and c, and than that between b and a; when, ſays he, the thing is quite the reverſe, and may be proved by the ear.

Farther, lib. II. cap. x. he obſerves of the Limma, that as Pythagoras had divided the diapaſon into two diateſſarons and a ſeſquioctave tone, he diſcovered that the diateſſaron was capable of a like method of diviſion, namely, into two continued tones, and that interval which remained after a ſubtraction of the ditone from the diateſſaron. And this which he calls a ſemitone, is that which Ptolemy calls the ſemitone accepted and beſt known; and of which Plato in Timeus makes mention; when having followed the ſame proportion, he ſays that all the duple ratios were to be filled up with ſeſquitertias and a ſeſquioctave, and all the ſeſquitertias with ſeſquioctaves, and the interval 256 to 243. He adds, that Cicero mentions this ſemitone in his book de Univerſitate, as does Boetius in all his diviſions; and that there were none of the ancients to whom it was not known, for that all the philoſophers embraced the Pythagorean traditions of muſic. The ſame author adds, that the Pythagorean Limma was eſteemed by the Greeks, particularly Bacchius and Bryennius, to be

irrational; and that Plato himſelf dared not to call it a proportion, for the reaſon, as he conceives, that it was not ſuperparticular.

Hitherto we have ſpoken of the tone in general terms, and as an interval in a ſeſquioctave ratio, ſuch as conſtitutes the difference between the diateſſaron and diapente, and it is ſaid that the Pythagoreans acknowledged no other*; it is nevertheleſs neceſſary to mention that there is a leſſer interval, to which the appellation of tone is alſo given; the ratio whereof is that of 10 to 9. It is not ſufficiently clear who it was that firſt diſcovered it, but, from ſeveral paſſages in the harmonics of Ptolemy†, it ſhould ſeem that Didymus, an ancient muſician, whom he frequently takes occaſion to mention, was the firſt that adjuſted its ratio.

Dr. Wallis, who ſeems to have founded his opinion on that of Salinas, and certainly entertained the cleareſt conceptions of the ſubject, has demonſtrated very plainly how both the greater and leſſer tone are produced; for aſſuming the diapente to be in the ratio of 3 to 2, or which is the ſame, the numbers being doubled, 6 to 4; by the interpoſition of the arithmetical mean 5, he ſhews it to contain two intervals, the one in the ratio of 6 to 5, the other in that of 5 to 4‡.



The latter of theſe, which conſtituted the ditone or greater third, ſubtracted from the diapente, left that interval in the ratio of 6 to 5, which by the Greeks was called a Trihemitone, and by the Latins a deficient, or *ſemi* ditone, but by the moderns a leſſer or flat third.

The conſideration of the ſemiditone will be hereafter reſumed; but as to the ditone, it had a ſuperparticular ratio, and conſequently would not, any more than the diapente, admit of an equal diviſion‖.

* Salinas de Muſica, lib. II. cap. 17. Boet. lib. IV. cap. 5.

† Lib. II. cap. 13, 14. Salinas, lib. II. cap. 17.

‡ Wallis, Append. de Vet. Harm. quarto, pag. 322.

‖ That a ſuperparticular is incapable of an equal diviſion is clearly demonſtrated by Boetius, lib. III. cap. 1 and muſt be conſidered as a firſt principle in harmonics. Vide Macrobius in Somnium Scipionis, lib. II. cap. 1.

In

In order therefore to come at one that ſhould be the neareſt to equality, Dr. Wallis doubled the terms 5, 4, and thereby produced the numbers 10, 8, which have the ſame ratio. Nothing then was wanting but the interpoſition of the arithmetical mean 9,

DITONE	
Greater Tone	Leſſer Tone
8 9	10
Seſquioctave	Seſquinonal
Seſquiquarta	

and a diviſion was effected which produced the greater or ſeſquioctave tone, 9 to 8, and the leſſer or ſeſquinonal tone, 10 to 9 *.

CHAP. VI.

HAVING thus adjuſted the proportions of the greater and leſſer tone, it follows next in order to conſider the ſeveral diviſions of each, the firſt and moſt obvious whereof is that of the ſemitone; but here two things are to be remarked, the one that the adjunct *ſemi*, though it may ſeem to expreſs, as it does in moſt inſtances, the half of any given quantity, yet in muſical language has a ſignification the ſame with deficient or incomplete: the other is that although as the leſſer is always contained in the greater, and conſequently the tone comprehends the ſemitone and more, yet the ſemitone is not, nor can be found in, or at leaſt cannot be extracted from, or produced by any poſſible diviſion of the tone. The Ariſtoxeneans, who aſſerted that the diateſſaron conſiſted of two tones and a half, had no other way of defining the half tone, than by taking the ditone out of the diateſſaron, and the reſidue they pronounced to be a hemitone, as it nearly is; and the Pythagoreans, who profeſſed the admeaſurement and determination of intervals by ratios, and not by the ear, were neceſſitated to proceed in the ſame way; for after

* Wallis Append. de Vet. Harm. quarto, pag. 323. Salinas de Muſica, lib. II. cap. 17.

Pythagoras had adjuſted the diezeuctic tone, and found its ratio to be ſeſquioctave, or as 9 to 8, it no where appears that he or any of his followers proceeded to a diviſion of that interval into ſemitones, and indeed it is not in the nature of the thing poſſible to effect any ſuch diviſion of it by equal parts. Ptolemy, who, ſo far as regards the method of defining the intervals by their ratios, muſt be ſaid to have been a Pythagorean, has had recourſe to this method of ſubtracting a leſſer interval from a greater for adjuſting the proportion of the Limma; for after having aſſumed that the ratio of the diateſſaron was ſeſquitertia, anſwering to the numbers 8 and 6, or which is the ſame, 4 to 3, he meaſures out three ſeſquioctave tones, 1536, 1728, 1944, 2187, and ſubtracts from them the diateſſaron 2048 to 1536, and thereby leaves a ratio of 2187 to 2048, which is that of the apotome; the limma 2048 to 1944, then remains an adjunct to the two ſeſquioctave tones 1728 to 1536, and 1944 to 1728; and the ratio of 2048 to 1536 is 8 to 6, or 4 to 3; and would we know the ratio of 2048 to 1944, it will be found to be 256 to 243, for eight times 256 is 2048, and eight times 243 is 1944 *.

And Didymus, who after he had diſcovered the neceſſity of a diſtinction of tones into the greater and leſſer, and found that it required an interval different in magnitude from the limma, to complete the diateſſaron, had no way to aſcertain the ratio of that interval, but by firſt adjuſting that of the ditone; in the doing whereof he alſo determined that of the ſemitone, for ſo are we neceſſitated to call the interval by which the diateſſaron is found to exceed the ditone. With reſpect to this interval, which, in the judgment of Salinas, is of ſuch importance, that he ſeems to think it the hinge on which the knowledge of all inſtrumental harmony turns; it ſeems clearly to have taken place of the limma, immediately after the diſcrimination of the greater and leſſer tone: and there is reaſon to think it was inveſtigated by Didymus in the following manner. Firſt he conſidered the ratio of the diateſſaron to be, as has been ſhewn, ſeſquitertian, or as 8 to 6; or, which is the ſame, thoſe numbers being doubled, 16 to 12. The ditone he had demonſtrated to be in ſeſquiquarta proportion, as 5 to 4. It remained then to find out a number that ſhould contain 5 of theſe parts, of which 12 contained four, and this could

* See the preceding demonſtration of the ratio of the Pythagorean limma.

be

be no other than 15, and theſe being ſet down, demonſtrated the ratio of the ſemitone to be 16 to 15.

DIATESSARON	
Ditone	Greater Semitone
12 15	16
Seſquiquarta	Seſquidecimaquinta
Seſquitertia	

*

This interval is alſo the difference between the ſemiditone 6 to 5, and the ſeſquioctave tone 9 to 8, which, multiplying the extreme numbers by 3, is thus demonſtrated.

SEMIDITONE	
Greater Semitone	Tone
15 16	18
Seſquidecimaquinta	Seſquioctave
Seſquiquinta	

†

But it ſeems that this interval, ſo very accurately adjuſted, did not anſwer all the combinations of which the greater and leſſer tones were capable; nor was it adapted to any diviſion of the ſyſtem, other than that which diſtinguiſhes the diatonic genus. Theſe conſiderations gave riſe to the invention of the leſſer ſemitone, an interval ſo peculiarly appropriated to the chromatic genus, that Salinas and Merſennus ſcruple not to call it the Chromatic Dieſis; the meaſure of it is the difference between the ditone and ſemiditone, the former whereof is demonſtrated to be in ſeſquiquarta proportion, or as 5 to 4; or, which is the ſame, each of thoſe numbers being multiplied by 5, 25 to 20. The ſemiditone is ſeſquiquinta, that is to ſay, as 6 to 5; or multiplying each of thoſe numbers by four, as 24 to 20; from a compariſon therefore of the ſemiditone with the ditone, it will ap-

* This and moſt of the diagrams for demonſtrating the other intervals are taken from Salinas, who, it is to be remarked, differs from many other writers in the order of the numbers of ratios, placing the ſmalleſt firſt.

† Salinas, lib. II. cap. xviii.

pear that the difference between them is an interval of 25 to 24, the ratio ſought, and which is the meaſure of the leſſer ſemitone.

DITONE	
Semiditone	Leſſer Semitone
20	24 25
Seſquiquinta	Seſquivigeſimaquarta
Seſquiquarta	*

Salinas remarks that this leſſer ſemitone of 25 to 24, and the greater one of 16 to 15, compoſe the ſeſquinonal or leſſer, and not the ſeſquioctave or greater tone, between which and the former he demonſtrates the difference to be a comma, or an interval in the ratio of 81 to 80.

Salinas, Merſennus, and other writers, chiefly moderns, ſpeak of a mean ſemitone in the ratio of 135 to 128, which with that greater one of 16 to 15, completes the ſeſquioctave tone; and of another in the ratio of 27 to 25, which added to the leſſer ſemitone 25 to 24, alſo makes up the greater or ſeſquioctave tone †. Salinas aſcribes the invention of this latter to Ludovicus Follianus, a very ingenious muſician of the ſixteenth century, of whom an account will be hereafter given; but he ſays it is unfit for harmony: and indeed it does not appear to have ever been admitted into practice. Salinas de Muſica, lib. III. cap. 7.

We are now to ſpeak of the Dieſis, as being an interval leſs in quantity than the ſemitone: though it is to be remembered that the word as it imports indefinitely a Particle ‡, is of very looſe ſignification, and is uſed to expreſs a great variety of diſſimilar intervals. Ariſtotle calls dieſes the Elements of ſong, as letters are of ſpeech; but in this the moderns differ from him. Others of the Greek writers, and Vitruvius a Latin, after them, make the dieſis to be a quarter of a tone, and Salinas leſs. The Pythagoreans uſe the words Dieſis and Limma indiſcriminately to expreſs the interval 256 to 243. In the ſubſe-

* Salinas, de Muſica, lib. II. cap. 20.

† Salinas, lib. II. cap. 20. lib. III. cap. 7. Merſen. Harmonic. lib. V. De Diſſonantiis, pag. 7.

‡ Macrob. in Somn. Scipion. lib. II. cap. 1.

quent

quent diviſion of the tone into leſſer parts, the name of dieſis has been given ſometimes to one, and at others to other parts ariſing from that diviſion; and hence thoſe different definitions which we meet with of this interval; but the general opinion touching it is that it is leſs than a ſemitone, and more than a comma. We will conſider it in all its variety of ſignifications.

Boetius, in the third book of his treatiſe de Muſica, has related at large the method taken by Philolaus the Pythagorean for dividing the tone into nine parts, called commas, of which we ſhall ſpeak more particularly hereafter; according to this diviſion, two commas make a diaſchiſma, and two diaſchiſmata a dieſis. This is one of the ſenſes in which the term dieſis is uſed, but it is not eaſy to diſcover the uſe of this interval, for it does not ſeem to be adapted either to the tetrachord compoſed of ſeſquioctave tones, or that later one of Didymus, which ſuppoſes a diſtinction of a greater and leſſer tone; ſo that in this inſtance the term ſeems to be reſtrained to its primitive ſignification, and to import nothing more than a particle; and Salinas ſeems to concur in this ſenſe of the word when he ſays that in each of the genera of melodies the leaſt interval is called a dieſis.

In other inſtances we are to underſtand by it ſuch an interval as, together with others, will complete the ſyſtem of a diateſſaron. There are required to form a diateſſaron, or tetrachord in each of the genera, tones, ſemitones, and dieſes. In the diatonic genus the dieſis is clearly that, be it either a ſemitone, a limma, or any other interval, which, together with two tones is neceſſary to complete the tetrachord. If with the Pythagoreans we ſuppoſe the two tones to be ſeſquioctave, it will follow that the dieſis and the limma 256 to 243 are one and the ſame interval; on the other hand, if with Didymus we aſſign to the two tones, the different ratios of 10 to 9, and 9 to 8, the interval neceſſary to complete the diateſſaron will be 16 to 15; or the difference between the ditone in the ratio of 5 to 4, and the diateſſaron above demonſtrated. In ſhort, this ſuppletory interval, whatever it be, is the only one in the diatonic genus, to which the appellation of dieſis is ever given.

To the chromatic genus belong two intervals of different magnitudes, and the term dieſis is common to both; the firſt of theſe is that of 25 to 24, mentioned above, and ſhewn to be the difference between the ditone and ſemiditone, and is what Salinas has appropriated

propriated to the chromatic genus. Gaudentius mentions alſo another ſpecies of dieſis that occurs in this genus, in quantity the third part of a tone *, in which he has followed Ariſtoxenus; but as all the diviſions of the Ariſtoxeneans were regulated by the ear, and ſuppoſed a diviſion of the tone into equal parts, which parts being equal, muſt neceſſarily be irrational, it would be in vain to ſeek a numerical ratio for the third part of a tone.

We are now to ſpeak of that other dieſis incident to the enarmonic genus, to which the term, in the opinion of moſt writers, ſeems to be appropriated †; for whereas the other dieſis obtained that name, only as being the ſmalleſt interval required in each genus, this other is the ſmalleſt that any kind of muſical progreſſion will poſſibly admit of. Ariſtides Quintilianus ſays, a dieſis is as it were a diſſolution of the voice ‡.

According to Boetius, who muſt every where be underſtood to ſpeak the ſenſe of the Pythagoreans, the two dieſes contained in the tetrachord of the enarmonic genus muſt have been unequal, for he makes them to ariſe from an arithmetical diviſion of the limma, 256 to 243 ||.

Ptolemy has exhibited §, as he has done in each of the other genera, a table of the enarmonic genus, according to five different muſicians, all of whom, excepting Ariſtoxenus, make the dieſes to be unequal, thoſe of Ptolemy are 24 to 23, and 46 to 45.

Salinas uſes but one enarmonic dieſis, which he makes to be the difference between the greater ſemitone 16 to 15, and the leſſer 25 to 24.

GREATER SEMITONE	
Leſſer Semitone	Dieſis
120	125 128
Seſquivigeſimaquarta	Supertripartiens 125
Seſquidecima quinta	¶

* Ex Verſ. Meibom. pag. 5.
† Boetius, lib. II. cap. 23, has given dieſes only to the enarmonic.
‡ Ex Verſ. Meibom. pag. 13.
|| Boetius, lib. IV. cap. 5.
§ Lib. II. cap. 14.
¶ Salinas, lib. II. cap. 21.

Which

Which numbers are thus produced, 15 and 16 each multiplied by 8 will give 120, and 128, for the greater ſemitone; we are then to ſeek for a number that bears the ſame ratio to 120, as 25 does to 24, which can be no other than 125, ſo that the ratio of the dieſis will ſtand 125 to 128.

Broſſard has applied the term dieſis to thoſe ſigns or characters uſed by the moderns to denote the ſeveral degrees by which a ſound may be elevated or depreſſed above or beneath its natural ſituation; for the doing whereof he ſeems to have had no better authority than that of the practitioners of his time, who perhaps are the only perſons entitled to an excuſe for having given to the ſign the name of the thing ſignified. He profeſſes to follow Kircher, when he ſays that there are three ſorts of dieſes, namely, the leſſer enarmonic or ſimple dieſis, containing two commas or about a quarter of a tone; the chromatic or double dieſis, containing a leſſer ſemitone, or nearly four commas, and the greater enarmonic dieſis, containing nearly three fourths of a tone, or from ſix to ſeven commas; but this definition is by much too looſe to ſatisfy a ſpeculative muſician.

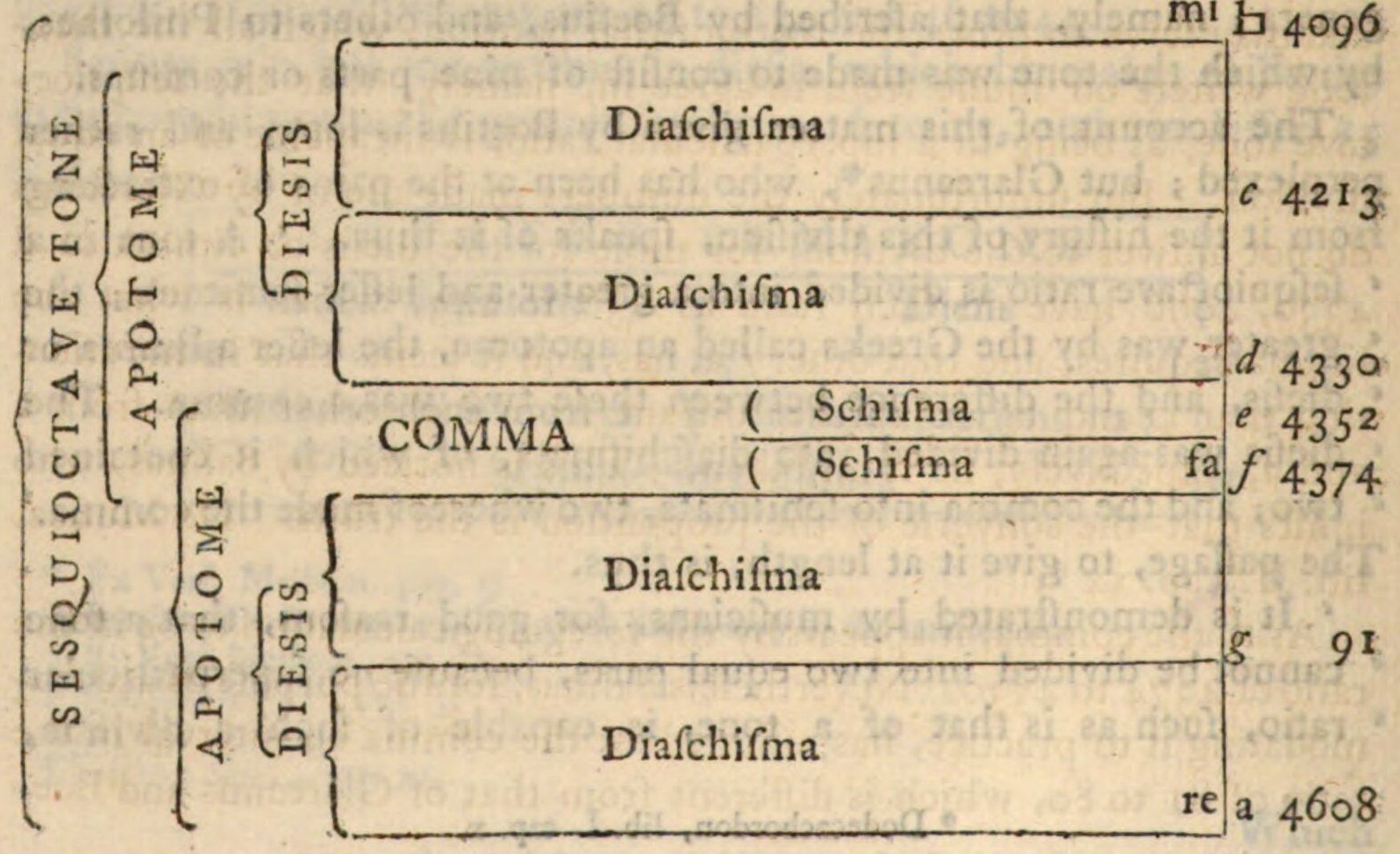
Theſe are all the intervals that are requiſite in the conſtitution of a tetrachord in any of the three genera: it may not be improper however to mention a diviſion of the tone, invented perhaps rather as an eſſay towards a temperature, than as neceſſary to the perfection of the genera; namely, that aſcribed by Boetius, and others to Philolaus, by which the tone was made to conſiſt of nine parts or commas.

The account of this matter given by Boetius is long, and rather perplexed; but Glareanus*, who has been at the pains of extracting from it the hiſtory of this diviſion, ſpeaks of it thus. ‘ A tone in a ‘ ſeſquioctave ratio is divided into a greater and leſſer ſemitone; the ‘ greater was by the Greeks called an apotome, the leſſer a limma or ‘ dieſis, and the difference between theſe two was a comma. The ‘ dieſis was again divided into diaſchiſmata, of which it contained ‘ two; and the comma into ſchiſmata, two whereof made the comma.’ The paſſage, to give it at length, is thus.

‘ It is demonſtrated by muſicians, for good reaſons, that a tone ‘ cannot be divided into two equal parts, becauſe no ſuperparticular ‘ ratio, ſuch as is that of a tone, is capable of ſuch a diviſion,

* Dodecachordon, lib. I. cap. x.

'as Divus Severinus Boetius fully ſhews in his third book, chap. i. 'a tone which is in a ſeſquioctave ratio is divided into a greater and 'leſſer ſemitone. The Greeks call the greater ſemitone an apotome, 'and the leſſer a dieſis or limma; but the leſſer ſemitone is divided 'into two diaſchiſmata. The exceſs whereby a greater ſemitone is 'more than a leſſer one is called a comma, and this comma is divided 'into two parts, which are called ſchiſmata by Philolaus. This 'Philolaus, according to Boetius, gives us the definitions of all thoſe 'parts. A dieſis, he ſays, is that ſpace by which a ſeſquialteral ratio 'or diateſſaron exceeds two tones; and a comma is that ſpace 'whereby a ſeſquioctave ratio is greater than two dieſes, that 'is than two leſſer ſemitones. A ſchiſma is that half of a 'comma, and a diaſchiſma is the half of a dieſis, that is of a leſſer 'ſemitone; from which definitions and the following ſcheme you 'may eaſily find out into how many diaſchiſmata, and the other 'ſmaller ſpaces, a tone may be divided, for the ſame Boetius ſhews 'that it can be done many ways in his treatiſe, lib. III. cap. viii. 'from whence we have taken theſe deſcriptions. It is to be obſerved 'that the name of dieſis is proper in this place; but when, as the 'ancients have done, we give it to the enarmonic diaſchiſma it is 'improper.



'Let

'Let a ⊔ be a tone, ⊔ *d*, or *f* a, a leſſer ſemitone, or as the Greeks 'call it, as Boetius witneſſeth lib. II. cap. xxvii, a limma or dieſis, '⊔ *f*, or *d* a, a greater ſemitone, called by the Greeks an apotome, '⊔ *c* and *c d*, alſo *f g* and *g* a, diaſchiſmata, or the halves of a dieſis, '*d f* a comma, whoſe halves *d e* and *e f* are ſchiſmata; but it is ne- 'ceſſary for our purpoſe to obſerve this, let a be Meſe, or a *la mi* '*re*, *f* Trite ſynemmenon or *fa* in b *fa* ⊔ *mi* ⊔ Parameſe or *mi* in b '*fa* ⊔ *mi*, therefore the note *re* in a *la mi re* is diſtant from *fa* in b '*fa* ⊔ *mi* by a leſſer hemitone, and from *mi* in the ſame key by a 'tone; from whence it follows, that the two notes in b *fa* ⊔ *mi*, 'which ſeem to be of the ſame key, are farther diſtant from each 'other than from the extremes or neighbouring keys above and 'below, viz. *mi* from *c ſol fa ut*, and *fa* from a *la mi re*, for *mi* 'and *fa* are ſeparated from each other by a greater ſemitone, and 'from the extremes on either ſide by only a leſſer ſemitone, for 'which reaſon this theory is not to be deſpiſed. We muſt not omit 'what the ſame Severinus tells us in lib. III. cap. xiv. and xv. to wit 'that a leſſer ſemitone is not altogether four commas, but ſomewhat 'more than three; and that a greater ſemitone is not five commas, 'but ſomewhat more than four; from whence it comes to paſs that 'a tone exceeds eight commas, but does not quite make up nine.'

This of Philolaus is generally deemed the true diviſion of the tone, and may ſerve to prove the truth of that poſition, which all the theoretic writers on muſic ſeem to agree in, namely, that the ſeſquioctave tone, as being in a ſuperparticular ratio, is incapable of an equal diviſion. But unfortunately the numbers made uſe of by Glareanus do not anſwer to the diviſion, for thoſe for the dieſis or limma ⊔ d 4330, 4096 have no ſuch ratio as 256 to 243, which is what the limma requires, and that other *f* a, has, and it ſeems that in his aſſertion that ⊔ and b are farther diſtant from each other than from c and a, reſpectively, he is miſtaken. This is noticed by Salinas, who inſiſts that the converſe of the propoſition is the truth. De Muſica, lib. II. cap. xx *.

As to the comma, it appears by the foregoing calculation to be in the ratio of 4374 to 4330. Nevertheleſs Salinas, for the purpoſe of accommodating it to practice, has aſſumed for the comma an interval in the ratio of 81 to 80, which is different from that of Glareanus and Boe-

* See his ſentiment of it pag. 73 of the preſent work.

tius, but is clearly ſhewn by Salinas to be the difference between the greater and leſſer tone. Ptolemy looked upon this latter comma as an inſenſible interval, and thought that therefore it was a thing indifferent whether the ſeſquioctave or the ſeſquinonal tone held the acuteſt ſituation in the diatonic tetrachord; but Salinas aſſerts, that though it is the leaſt, it is yet one of the ſenſible intervals, and that by means of an inſtrument which he himſelf cauſed to be made at Rome, he was enabled to diſtinguiſh, and by his ear to judge, of the difference between the one and the other of the tones.

Merſennus ſays that the Pythagoreans had another comma, which was in the ratio of 531441 to 524288, and was between ſeſqui $\frac{1}{73}$ and ſeſqui $\frac{1}{74}$; and that Chriſtopher Mondore, in a book inſcribed by him to Margaret, the ſiſter of Henry III. of France, ſpeaks of another between ſeſqui $\frac{1}{86}$, and ſeſqui $\frac{1}{87}$ *. As to the firſt, though he does not mention it, it is clear that he took the ratio of it from Salinas, who in the nineteenth and thirty-firſt chapters of his fourth book ſpeaks very particularly of the Pythagorean comma, and ſays that it is the difference whereby the apotome exceeds the limma.

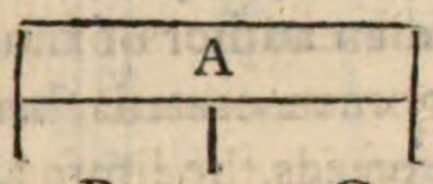
We have now inveſtigated in a regular progreſſion the ratios of the ſeveral intervals of the greater and leſſer tone, the greater and leſſer ſemitone, the apotome and limma, the dieſis, and the comma; and thereby reſolved the tetrachord into its elements. It may be worth while to obſerve the ſingular beauties that ariſe in the courſe of this deduction, and how wonderfully the leſſer intervals ſpring out of the greater; for the difference between

The	Diapente and Diateſſaron	is - - -	a ſeſquioctave tone.
The	Ditone and Greater tone	is - - -	a ſeſquinonal tone.
The	Semiditone and greater tone and alſo between the diateſſaron and ditone	is	a greater ſemitone.
The	Leſſer tone and greater ſemitone and alſo between the ditone and ſemiditone	is	a leſſer ſemitone.
The	Greater tone and Leſſer tone	is - -	a comma.
The	Greater ſemitone and Leſſer ſemitone	is - -	an enarmonic dieſis.

* Harmonicor. lib. V. de Diſſonantiis, pag. 88.

Sali-

Salinas remarks much to the ſame purpoſe on the regular order of the ſimple conſonances in theſe words. ‘ It ſeems worthy of the ‘ greateſt obſervation, that the differences of the ſimple conſonances, ‘ each above that which is the next under it, are found to be in the ‘ proportions which the firſt ſquare numbers hereunderwritten bear ‘ to thoſe that are the next leſs to them : to inſtance in the diapaſon, ‘ the exceſs above the diapente is the diateſſaron, which is found in ‘ the ratio between the firſt ſquare number 4, and its next leſs number 3. The exceſs of the diapente above the diateſſaron is the ‘ greater tone, which is found in the ratio between the numbers 9 ‘ and 8. Again, that of the diateſſaron above the ditone is the ‘ greater ſemitone, found in the ratio 16 to 15; farther, the exceſs ‘ of the ditone above the ſemiditone is the leſſer ſemiditone 25 to 24. ‘ All theſe will appear more clearly in the following diſpoſition of the ‘ numbers.



B	C	A	B	C
2	3	4	Diapaſon	Diapente	Diateſſaron
6	8	9	Diapente	Diateſſaron	Tone Major
12	15	16	Diateſſaron	Ditone	Semitone majus
20	24	25	Ditone	Semiditone	Semitone minus

‘ In the above diſpoſition, the laſt numbers are ſquare, the firſt longilateral, and the middle ones leſs than thoſe that are ſquare by ‘ unity, but greater than the longilateral ones by as many units as ‘ there are numbers of ſquares above them. The greateſt ratios are ‘ thoſe between the longilaterals and the ſquares, the leſſer between ‘ the longilaterals and middle numbers, and the leaſt or differences ‘ thoſe between the ſquares and the middle ones. Of the ratios the ‘ greateſt are marked A, the leſſer B, and the leaſt C *.’

Obſervations of this kind are perpetually occuring in the courſe of harmonical calculations; and it cannot but be a matter of aſtoniſhment to an intelligent mind to find, that thoſe combinations of muſical ſounds which afford delight to the ſenſe of hearing, have ſuch a relation among themſelves, and are diſpoſed with ſuch order and re-

* De Muſica, lib. II. cap. xx.

gularity,

gularity, that they approve themſelves alſo to the underſtanding, and exhibit to the mind a new ſpecies of beauty, ſuch as is obſervable in theorems, and will for ever reſult from deſign, regularity, truth, and order. It is ſaid that the ſenſes are arbitrary, and that too in ſo great a degree, as to give occaſion to a well known axiom that precludes all diſpute about them; but that of hearing ſeems to be an exception; for what the ear recognizes to be grateful, the underſtanding approves as true. To enquire farther into the reaſons why the ſenſe is delighted with harmony and conſonance, would be vain, ſince all beyond what we are able to diſcover by numerical calculation is reſolvable into the will of Him who has ordered all things in number, weight, and meaſure.

The genera, as has been mentioned, were three; the diatonic, the chromatic, and the enarmonic. We are farther to underſtand a ſubdiviſion of theſe into ſpecies. Gaudentius expreſsly ſays, 'The 'ſpecies or colours of the genera are many *,' and an author of much greater authority, Ariſtoxenus, has particularly enumerated them. According to him the diatonic genus had two ſpecies, the ſoft and the intenſe; the chromatic three, the ſoft, the hemiolian †, and the tonic ‡; as to the enarmonic, it had no ſubdiviſion. Indeed the repreſentations of the genera and their ſpecies, as well by diagrams as in words, are almoſt as numerous as the writers on muſic. Monſieur Broſſard has exhibited a view of the Ariſtoxenean diviſion, taken, as he ſays, from Vitruvius; and the ſame is to be met with in an Engliſh dictionary of muſic, publiſhed in the year 1740, by James Graſſineau ||.

* Ex Verſ. Meibom. pag. 5.

† This is but another name for ſeſquialtera, as Andreas Ornithoparcus aſſerts in his Micrologus, lib. II. on the authority of Aulus Gellius. It ſignifies a whole and its half, conſequently the ſeſquialtera ratio in its ſmalleſt numbers is 3 to 2.

‡ Vide Wall. Append. de veter. Harm. quarto, pag. 299.

|| At the time when the above book was publiſhed the world were ſurprized; no ſuch perſon as James Graſſineau being known to it as poſſeſſed of any great ſhare of muſical erudition, and the work offered to the public appeared to be the reſult of great ſtudy and ſkill in the ſcience. But the wonder ceaſed when it came to be known that the baſis of Graſſineau's book was the Dictionaire de Muſique of Monſieur Sebaſtian Broſſard of Straſburg; though, to do him juſtice, Graſſineau in his preface ingenuouſly confeſſes he had made a liberal uſe of it. For the reſt of it he ſtood indebted to Dr. Pepuſch, and perhaps in a ſmall degree to the other maſters, Dr. Greene and Mr. Galliard, who have joined in the recommendation of it.

Graſſineau was an ingenious young man; he underſtood the Latin and French languages, the latter very well, and knew a little of muſic; he had been clerk to Mr. Godfrey

But this repreſentation is not near ſo particular and accurate, as the Ariſtoxenean Synopſis of the Genera given by Dr. Wallis in the Appendix to his edition of Ptolemy, and here inſerted.

	Enarmonic Genus	Chromatic Genus			Diatonic Genus		
		Soft	Hemiolian	Toniac	Sott	Intenſe	
30	Nete	Nete	Nete	Nete	Nete	Nete	30
24				18	15	12	24
18	24	22	21			Paranete / Lichanos	18
15					Paranete / Lichanos		15
12				Paranete / Lichanos		12	12
9		Paranete	Paranete	6	9		9
6	Paranete	Lichanos 4	Lichanos $4\frac{1}{2}$	Trite	Trite	Trite	6
3	Lichanos 3	Trite	Trite	Parypate 6	Parypate 6	Parypate 6	3
	Trite	Parypate 4	Parypate $4\frac{1}{2}$				
	Parhypate 3						

frey the chemiſt in Southampton-ſtreet, Covent-Garden, but being out of employ, he became the amanuenſis of Dr. Pepuſch, and tranſlated for him into Engliſh ſome of the Greek harmonicians from the Latin verſion of Meibomius. The Doctor having no farther occaſion for him, recommended it to him to tranſlate Broſſard's dictionary abovementioned, which he undertook and completed, the Doctor furniſhing him with many new articles, and with additional matter for the enlargement of thoſe contained in Broſſard; and Graſſineau's dictionary would have been an ineſtimable preſent to the muſical world, had due care been taken in the correction of it, but it abounds with errors, and the author is not now living to correct them in a new edition.

Although the dictionary of Broſſard, and this of Graſſineau contain a great variety of uſeful knowledge, it is to be wiſhed that it had been communicated to the world in ſome better form than that of a dictionary; for to ſpeak of the latter, ſome of the articles contained in it are complete treatiſes.

In order to underſtand this ſcheme, we muſt ſuppoſe the tetrachord hypaton, though any other would have ſerved the purpoſe as well, divided into thirty equal parts: in the primitive diviſion of this ſyſtem, according to the diatonic genus, the ſtations of the two intermediate ſounds parypate and lichanos, for it is to be noted that thoſe at the extremities termed ſtabiles, or immoveables, were at 6 and 18; that is to ſay, the firſt interval in the tetrachord was 6 parts, and each of the other two 12, making together 30; ſo that the ſecond interval was the double of the firſt, and the third equal to the ſecond, anſwering preciſely to the hemitone, tone, and tone; this is ſpoken of the intenſe diatonic, for it is that ſpecies which the ancients are ſuppoſed to have meant whenever they ſpoke of the diatonic generally.

The ſoft diatonic has for its firſt interval 6, for its ſecond 9, or a hemitone and a quadrantal dieſis, or three fourths of a tone, and for its third 15, viz. a tone and a quadrantal dieſis.

We are now to ſpeak of the chromatic genus, the firſt ſpecies whereof, the tonic, had for its firſt interval 6, or a hemitone; for its ſecond alſo 6, and for its third 18, a trihemitone, or tone and a half.

In the hemiolian chromatic, called alſo the ſeſquialteral *, the firſt and alſo the ſecond interval was $4\frac{1}{2}$, which is a hemiolian or ſeſquialteral dieſis; and the third 21, or a tone, a hemitone, and a quadrantal dieſis.

The ſoft chromatic makes the firſt and alſo the ſecond interval a triental dieſis or third part of a tone, by aſſigning to parypate and lichanos, the ſtations of 4 and 18; and gives to the third twenty-two twelfths of a tone, or, which is the ſame, twenty-two thirtieths of the whole tetrachord, which amount to a tone, a hemitone, and a triental dieſis.

In the enarmonic genus, which, in the opinion of moſt authors, had no diviſion into ſpecies, the firſt and ſecond intervals, being terminated by 3 and 6, were each quadrantal dieſes, or three twelfths of a tone, and the laſt a ditone. Of the dieſis in this genus it is ſaid by Ariſtoxenus and others, that it is the ſmalleſt interval that the human voice is capable of expreſſing; and it is farther to be remarked, that it is ever termed the enarmonic dieſis, as being appropriated to the enarmonic genus.

Euclid's

* Vide pag. 86, in not.

Euclid's account of the genera is not much different from this of Ariſtoxenus. The diatonic, he ſays, proceeds from the acute to the grave by a tone, a tone, and a hemitone; and, on the contrary, from the grave to the acute by a hemitone, a tone, and a tone. The chromatic from the acute to the grave by a trihemitone, a hemitone, and a hemitone; and, contrarywiſe, from the grave to the acute by a hemitone, a hemitone, and a trihemitone. The enarmonic progreſſion, he ſays, is a deſcent to the grave by a ditone, a dieſis, and a dieſis; and an aſcent to the acumen by a dieſis, a dieſis, and a ditone. He ſpeaks of a commixture of the genera, as namely, the diatonic with the chromatic, the diatonic with the enarmonic, and the chromatic with the enarmonic.

He exhibits the biſdiapaſon according to each of the genera, enumerating the ſeveral ſounds as they occur, from Proſlambanomenos to Nete hyperboleon, and obſerves that ſome of them are termed Stantes or ſtanding ſounds, and others Mobiles or moveable; the meaning of which is no more than that the extreme ſounds of each tetrachord are immoveable, and that the difference between the genera conſiſts in thoſe ſeveral mutations of the intervals, which are made by aſſigning different poſitions to the two intermediate ſounds.

Colour he defines to be a particular diviſion of a genus; and, agreeable to what is ſaid by Ariſtoxenus, he ſays that of the enarmonic there is one only; of the chromatic three, and of the diatonic two. He ſays farther, that the enarmonic progreſſion is by a dieſis, a dieſis and incompoſite ditone; that the chromatic colours or ſpecies are the ſoft, proceeding by two dieſes, each being the third part of a tone, and an incompoſite interval equal to a tone, and its third part; and the ſeſquialteral, proceeding by a dieſis in a ſeſquialteral ratio to that in the enarmonic, another ſuch dieſis, and an incompoſite interval conſiſting of ſeven dieſes, each equal to a fourth part of a tone; and the tonic by a hemitone, a hemitone, and a trihemitone. Of the diatonic he ſays there are two ſpecies, namely the ſoft and the intenſe, by ſome called alſo the ſyntonous; the former proceeding by a hemitone, an interval of three quadrantal dieſes, and by another of five ſuch dieſes; and the latter by a common diviſion, with its genus, namely, a tone, a tone, and a hemitone.

And here it is to be obſerved, that theſe ſeveral definitions of the genera are taken from ſome one or other of their reſpective ſpecies;

thus that of the tonic chromatic is the ſame by which the genus itſelf is defined; and the definition of the ſyntonous or intenſe diatonic is what is uſed to denote the genus itſelf. From hence it ſhould ſeem that of the ſpecies ſome were deemed ſpurious, or at leaſt that ſome kind of pre-eminence among them, unknown to us, occaſioned this diſtinction; which amounts to no leſs than ſaying that the ſoft chromatic is more truly the chromatic than either of the other two ſpecies of that genus; and that the intenſe or ſyntonous diatonic is more truly the diatonic than the ſoft diatonic: as to the enarmonic, it cannot in ſtrictneſs be ſaid to have had any colour or ſpecies, for it admits of no ſpecific diviſion.

To demonſtrate the intervals in each ſpecies by numbers, Euclid ſuppoſes a diviſion of the tone into twelve parts. To the hemitone he gives ſix, to the quadrantal dieſis three, and to the triental dieſis four; and to the whole diateſſaron he aſſigns thirty. In the application of theſe parts to the ſeveral ſpecies, he ſays firſt, that the intervals in the ſoft chromatic are four, four, and twenty-two; in the ſeſquialteral four and a half, four and a half, and twenty-one; and in the tonic ſix, ſix, and eighteen; in the ſoft diatonic ſix, nine, and fifteen; and in the ſyntonous ſix, twelve, and twelve.

CHAP. VII.

ARISTIDES Quintilianus, who, in the judgment of Dr. Wallis *, ſeems in this reſpect to have been an Ariſtoxenean, ſpeaks of the genera and their ſpecies in the following manner. 'Genus is a certain diviſion of the tetrachord. There are three genera of modulation, namely the harmonic, chromatic, and diatonic; the difference between them conſiſts in the diſtances of their reſpective intervals. The harmonic is that genus which abounds in the leaſt intervals, and takes its name from adjoining together. The diatonic is ſo called becauſe it proceeds by, or abounds in, tones. The chromatic is ſo termed, becauſe, as that which is be-

* Append. de veter. Harm. pag. 318.

'tween white and black is called Colour, ſo alſo that which holds
the middle place between the two former genera as this does, is
named Chroma. The enarmonic is ſung by a dieſis, dieſis, and an
incompoſite ditone towards the acute; and contrarywiſe towards
the grave. The chromatic towards the acute by a hemitone, a he-
mitone, and trihemitone; and contrarywiſe towards the grave.
The diatonic by a hemitone, a tone, and tone towards the acute;
and contrarywiſe towards the grave. The diatonic is the moſt na-
tural of all, becauſe it may be ſung by every one, even by ſuch as
are unlearned. The moſt artificial is the chromatic, for only learn-
ed men can modulate it; but the moſt accurate is the enarmonic:
it is approved of by only the moſt ſkilful muſicians; for thoſe who
are otherwiſe look on the dieſis as an interval which can by no
means be ſung, and to theſe, by reaſon of the debility of their
faculties, the uſe of this genus is impoſſible. Each of the genera
may be modulated both by conſecutive ſounds and by leaps.
Moreover, modulation is either direct or ſtrait forward, revert-
ing or turning back, or circumcurrent, running up and down:
the direct is that which ſtretches towards the acute from the grave;
the reverting that which is contrary to the former; and the cir-
cumcurrent is that which is changeable, as when we elevate by
conjunction, and remit by disjunction. Again, ſome of the gene-
ra are divided into ſpecies, others not. The enarmonic, becauſe
it conſiſts of the ſmalleſt dieſes, is indiviſible. The chromatic may
be divided into as many rational intervals as are found between the
hemitone and enarmonic dieſis; the third, namely the diatonic,
into as many rational intervals as are found between the hemitone
and tone; there are therefore three ſpecies of the chromatic, and
two of the diatonic. And, to ſum up the whole, theſe added to
the enarmonic make ſix ſpecies of modulation; the firſt is diſtin-
guiſhed by quadrantal dieſes, and is called the enarmonic; the
ſecond by triental dieſes, and is called the ſoft chromatic; the third
by dieſes that are ſeſquialteral to thoſe in the enarmonic, and is
therefore called the ſeſquialteral chromatic. The fourth has a pe-
culiar conſtitution of two hemitones, it is called the tonic chroma-
tic: the fifth conſiſts of an hemitone and three dieſes, and the five
remaining ones, and is called the ſoft diatonic: the ſixth has an

'hemitone, tone, and tone, and is called the intenſe diatonic. But 'that what we have ſaid may be made clear, we ſhall make the divi-'ſion in the numbers. Let the tetrachord be ſuppoſed to conſiſt of 'ſixty units, the diviſion of the enarmonic is 6, 6, 48, by a qua-'drantal dieſis, a quadrantal dieſis, and a ditone. The diviſion of 'the ſoft chromatic 8, 8, 44, by a triental dieſis, a triental dieſis, 'and a trihemitone and triental dieſis. The diviſion of the ſeſquial-'teral chromatic is 9, 9, 42, by a ſeſquialteral dieſis, a ſeſquialteral 'dieſis, and a trihemitone and quadrantal dieſis. The diviſion of the 'tonic chromatic is 12, 12, 36, by an hemitone, an hemitone, and 'a trihemitone. That of the ſoft diatonic is 12, 18, 30, by a hemi-'tone, and three quadrantal dieſes, and five quadrantal dieſes. That 'of the intenſe diatonic is 12, 24, 24, by a hemitone, a tone, and a 'tone *.'

It is obſervable in this diviſion of Ariſtides Quintilianus, that the numbers made uſe of by him are double thoſe uſed by Euclid; the reaſon is, that the two dieſes in the ſeſquialteral chromatic are not ſo well defined by four parts and a half of thirty, as by 9 of 60; and it is evident that preſerving the proportions, whether we take the number 30 or 60 for the groſs content of the tetrachord, the matter is juſt the ſame.

Ptolemy, the moſt copious, and one of the moſt accurate of all the ancient harmonicians, has treated very largely of the genera; and has, for the reaſon above given, adopted the number 60 for the meaſure of the tetrachord; he has repreſented the Ariſtoxenean conſtitution of the ſix ſpecies by the following proportions.

Acute	48	44	42	36	30	24
Mean	6	8	9	12	18	24
Grave	6	8	9	12	12	12
	60	60	60	60	60	60
	Enarmonic	Chromatic ſoft	Chromatic ſeſquialteral	Chromatic tonic	Diatonic ſoft	Diatonic intenſe

* Ariſtides Quintilianus ex verſ. Meib. pag. 18, et ſeq. in which paſſage it is obſervable that he ſometimes uſes the term ἁρμονια, and others ἐναρμονια, to ſignify the enarmonic genus.

In

In which proportions he agrees both with Euclid and Ariſtides Quintilianus; though, for the purpoſe of aſcertaining them, he has preferred the numbers of the latter to thoſe uſed by Euclid.

In chapter xiv. of his ſecond book Ptolemy has given the genera, with each of their ſeveral ſpecies, according to five different muſicians, namely, Archytas *, Ariſtoxenus, Eratoſthenes †, Didymus, and himſelf. The ſum of his account, omitting the diviſion of Ariſtoxenus, for that is given above, is as follows.

Archytas	Enarmonic	$\frac{28}{27} \times \frac{36}{35} \times \frac{5}{4} = \frac{4}{3}$
	Chromatic	$\frac{28}{27} \times \frac{243}{224} \times \frac{32}{27} = \frac{4}{3}$
	Diatonic	$\frac{28}{27} \times \frac{8}{7} \times \frac{9}{8} = \frac{4}{3}$
Eratoſthenes	Enarmonic	$\frac{40}{39} \times \frac{39}{38} \times \frac{19}{15} = \frac{4}{3}$
	Chromatic	$\frac{20}{19} \times \frac{19}{18} \times \frac{6}{5} = \frac{4}{3}$
	Diatonic	$\frac{256}{243} \times \frac{9}{8} \times \frac{9}{8} = \frac{4}{3}$
Didymus	Enarmonic	$\frac{32}{31} \times \frac{31}{30} \times \frac{5}{4} = \frac{4}{3}$
	Chromatic	$\frac{16}{15} \times \frac{25}{24} \times \frac{6}{5} = \frac{4}{3}$
	Diatonic	$\frac{16}{15} \times \frac{10}{9} \times \frac{9}{8} = \frac{4}{3}$

In his own diviſion Ptolemy ſuppoſes five ſpecies of the diatonic genus, which, together with the enarmonic, and two ſpecies of the chromatic he thus defines.

Ptolemy	Enarmonic		$\frac{46}{45} \times \frac{24}{23} \times \frac{5}{4} = \frac{4}{3}$
	Chromatic	Soft	$\frac{28}{27} \times \frac{154}{144} \times \frac{6}{5} = \frac{4}{3}$
		Intenſe	$\frac{22}{21} \times \frac{121}{120} \times \frac{7}{6} = \frac{4}{3}$
	Diatonic	Soft	$\frac{210}{209} \times \frac{10}{9} \times \frac{8}{7} = \frac{4}{3}$
		Tonic	$\frac{28}{27} \times \frac{8}{7} \times \frac{9}{8} = \frac{4}{3}$
		Ditonic	$\frac{256}{243} \times \frac{9}{8} \times \frac{9}{8} = \frac{4}{3}$
		Intenſe	$\frac{16}{15} \times \frac{9}{8} \times \frac{10}{9} = \frac{4}{3}$
		Equable	$\frac{112}{111} \times \frac{11}{10} \times \frac{10}{9} = \frac{4}{3}$

* There were two of this name, the one of Tarentum a Pythagorean, famous, as Aulus Gellius and others relate, for having conſtructed an automaton in the form of a pigeon, which had the power of flying to a conſiderable diſtance; the other a muſician of Mitylene. They are both mentioned by Diogenes Laertius, but it is not certain which of the two was the author of the diviſion here given.

† Eratoſthenes, a Cyrenean philoſopher, and a diſciple of Ariſto and Callimachus, was librarian at Alexandria to Ptolemy Evergetes. He was for his great learning eſteemed a ſecond Plato. An aſtronomical diſcourſe of his is extant in the Oxford edition of Aratus; prefixed to which is an account of many other books of his writing now loſt. He is ſaid to have lived to the age of eighty-two; and, according to Helvicus, flouriſhed about the Olympiad cxxxviii. that is to ſay about two hundred and thirty years before Chriſt.

The

Martianus Capella gives this explanation of the genera: 'The enarmonic abounds in ſmall intervals, the diatonic in tones. The chromatic conſiſts wholly of ſemitones, and is called chromatic, as partaking of the nature of both the others; for the ſame reaſon as we call that affection colour which is included between the extremes of white and black. The enarmonic is modulated towards the acumen, or, as we ſhould now ſay, aſcends by a dieſis, dieſis, and an incompoſite ditone; the chromatic by a ſemitone, ſemitone, and an incompoſite trihemitone: and the diatonic, content with larger intervals, proceeds by a ſemitone, tone, and tone: we now chiefly uſe the diatonic.' He ſays farther, 'The poſſible diviſions of the tetrachord are innumerable, but there are ſix noted ones, one of the enarmonic, three of the chromatic, and two of the diatonic. The firſt of the chromatic is the ſoft, the ſecond is the hemiolian, and the third the tonian. The diviſions of the diatonic are two, the one ſoft and the other robuſt. The enarmonic is diſtinguiſhed by the quadrantal dieſis, the ſoft chromatic by the triental dieſis, and the hemiolian chromatic by the hemiolian dieſis, which is equal to an enarmonic dieſis and a half, or three eighths of a tone *.' In all this Capella is but a copier of Ariſtides Quintilianus; and, in the judgment of his editor Meibomius, and others, he is both a ſervile and an injudicious one.

Boetius † has treated the ſubject of the genera in a manner leſs ſatisfactory than could have been expected from ſo ſcientific a muſician: he mentions nothing of the ſpecies, but contents himſelf with an exhibition of the enarmonic, the chromatic, and diatonic, in three ſeveral diagrams, which are here given. He ſays that the diatonic is ſomewhat hard, but that the chromatic departs from that natural intenſion, and becomes ſomewhat more ſoft; and that the enarmonic is yet better conſtituted through the five tetrachords. The diatonic progreſſion, he ſays, is by a ſemitone, tone, and tone; and that it

The abovementioned edition of Aratus is a book not unworthy the notice of a learned muſician, as containing a ſhort but curious diſſertation De Muſicâ antiquâ Græcâ, by the editor Mr. Edmund Chilmead. Aratus was an eminent aſtronomer and poet, contemporary with Eratoſthenes; and in the Oxford publication is an aſtronomical poem, which it ſeems St. Paul alludes to in his ſpeech at Athens, Acts xvii. ver. 28. 'As certain of your own poets have ſaid.' Aratus was a Cilician, and a countryman of the apoſtle. Vide Bentley's Sermons at Boyle's Lecture, ſermon II.

* De Nuptiis Philologiæ et Mercurii, lib. IX. De Generibus Tetrachordorum.

† Lib. I. cap. xxi.

is

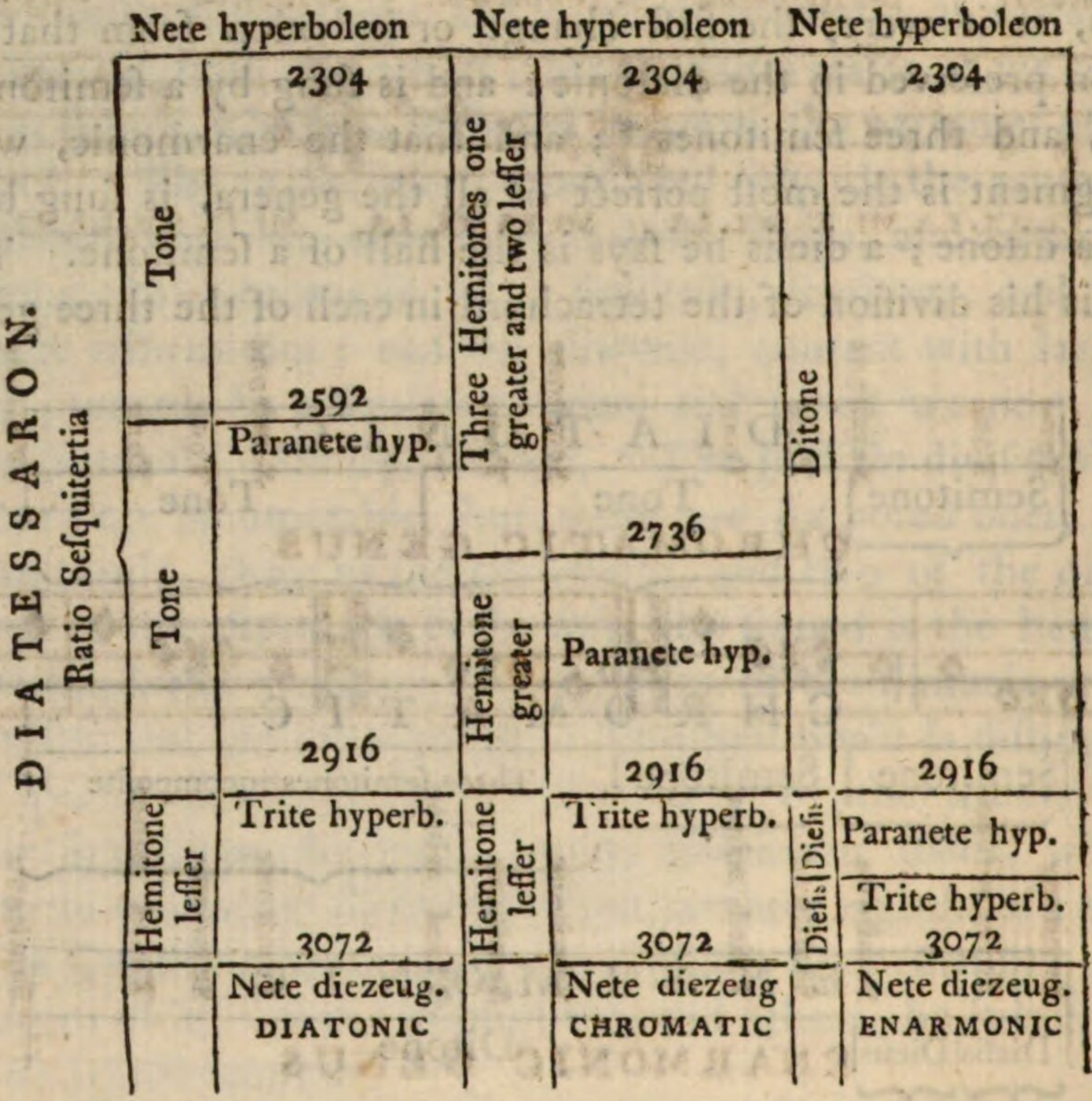
is called diatonic, as proceeding by tones. He adds that the chromatic, which takes its name from the word Chroma, ſignifying colour, is, as it were, the firſt change or inflexion from that kind of intenſion preſerved in the diatonic: and is ſung by a ſemitone, a ſemitone, and three ſemitones *; and that the enarmonic, which in his judgment is the moſt perfect of all the genera, is ſung by a dieſis and a ditone; a dieſis he ſays is the half of a ſemitone. The following is his diviſion of the tetrachord in each of the three genera.

He is ſomewhat more particular in his fourth book, chap. v. and again in the ſeventh chapter, for in the chromatic tetrachord he makes the ſemitones to be, the one a greater and the other a leſſer; and the trihemitone he makes to conſiſt of one greater and two leſſer ſemitones.

* In a diagram of Glareanus, repreſenting Boetius's diviſion of the chromatic, the laſt interval is thus defined; "tria ſemitonia incompoſita," which epithet, as Boetius himſelf explains it, is not meant to ſignify that the ſemitones are incomplete, but that the interval conſtituted by them is to be conſidered as an integer, and uncompounded like the tone, without regard to its conſtituent parts. De Muſ. lib. I. cap. xxiii.

TETRA-

TETRACHORD.



It is somewhat remarkable that this author has said nothing of the colours or species of the genera, about which so much is to be met with in Ptolemy and other writers, except towards the conclusion of his work, where he professes to deliver the sentiments of Aristoxenus and Archytas on this head; but he seems rather to reprehend than adopt their opinions, for which it seems difficult to assign any reason, other than that he was, as his writings abundantly prove, a most strenuous assertor of the doctrines of Pythagoras.

Mersennus * has given a scale of the succession of sounds in each of the three genera, as near as it could be done, in the characters of modern notation, which is here inserted, and may serve to shew how ill the division of the tetrachord in the chromatic and enarmonic genera agree with the notions at this time entertained of harmony, and the natural progression of musical sounds.

* Harmonic. De Generibus et Modis, pag. 97.

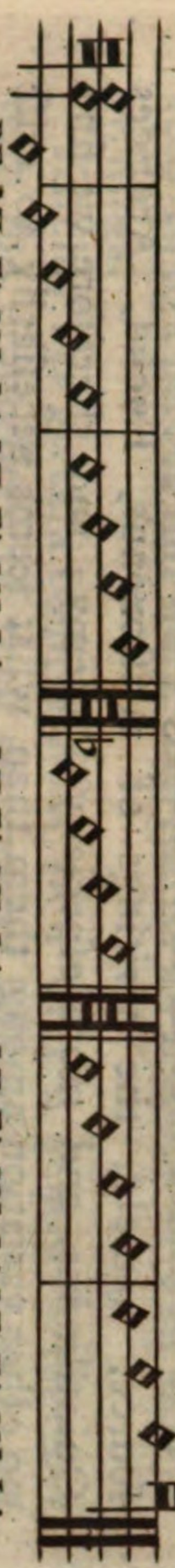
DIA-

BIBLIOTECA
REGIA
MONACENSIS

DIATONIC GENUS

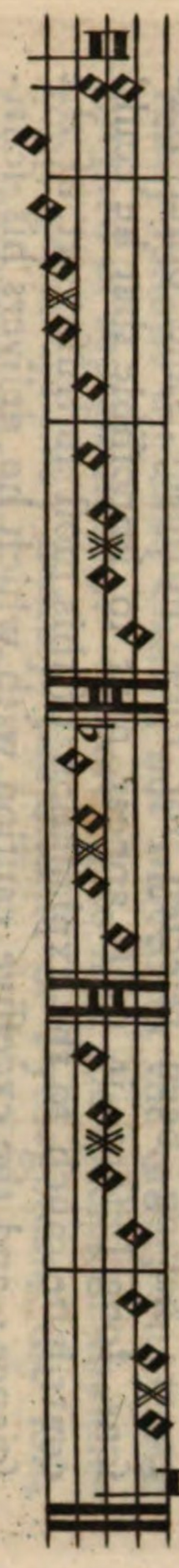
Tetrachord. Tetrachord. Tetrachord. Tetrachord.
hypaton. parhypaton. ſynemmen. diezeug. hyperb.

RE, MI FA SOL LA, MI FA SOL LA, MI FA SOL LA, MI FA SOL LA.



Proſlambanomenos		
Hypate hypaton		Tone
Parhypate hypaton	Dieſis	Semitone
Lychanos hypaton	Dieſis	Tone
Hypate meſon	Ditone	Tone
Parhypate meſon	Dieſis	Semitone
Lychanos meſon	Dieſis	Tone
Meſe	Ditone	Tone
Trite ſynemmenon	Dieſis	Semitone
Paranete ſynemmenon	Dieſis	Tone
Nete ſynemmenon	Third major	Tone
Parameſe		
Trite diezeugmenon	Dieſis	Semitone
Paranete diezeugmenon	Dieſis	Tone
Nete diezeugmenon	Third major	Tone
Trite hyperboleon	Dieſis	Semitone
Paranete hyperboleon	Dieſis	Tone
Nete hyperboleon	Ditone	Tone

CHROMATIC GENUS



Proſlambanomenos		
Hypate hypaton		Semitone
Parhypate hypaton	Semitone	Semitone
Lychanos hypaton	Semitone	Trihemitone
Hypate meſon	Trihemitone	
Parhypate meſon	Semitone	Semitone
Lychanos meſon	Semitone	Tone
Meſe	Third minor	Tone
Trite ſynemmenon	Semitone	Semitone
Paranete ſynemmenon	Semitone	Tone
Nete ſynemmenon	Third minor	Tone
Parameſe		
Trite diezeugmenon	Semitone	Semitone
Paranete diezeugmenon	Semitone	Tone
Nete diezeugmenon	Third minor	Tone
Trite hyperboleon	Semitone	Semitone
Paranete hyperboleon	Semitone	Tone
Nete hyperboleon	Trihemitone	Tone

ENARMONIC GENUS

Proſlambanomenos		
Hypate hypaton		Semitone
Parhypate hypaton	Dieſis	Semitone
Lychanos hypaton	Dieſis	Third minor
Hypate meſon	Ditone	
Parhypate meſon	Dieſis	Semitone
Lychanos meſon	Dieſis	Semitone
Meſe	Ditone	Third minor
Trite ſynemmenon	Dieſis	Semitone
Paranete ſynemmenon	Dieſis	Semitone
Nete ſynemmenon	Third major	Third minor
Parameſe		
Trite diezeugmenon	Dieſis	Semitone
Paranete diezeugmenon	Dieſis	Semitone
Nete diezeugmenon	Third major	Third minor
Trite hyperboleon	Dieſis	Semitone
Paranete hyperboleon	Dieſis	Semitone
Nete hyperboleon	Ditone	Trihemitone

J. Cook. Sculpt.

Other authors there are, particularly Franchinus, Vicentino, Vincentio Galilei, and Zarlino, that profeſs to treat of the genera; but it is to be noted that all their intelligence is derived from the ſame ſource, namely, the writings of Ariſtoxenus, Euclid, Ariſtides Quintilianus, and more eſpecially Ptolemy; and therefore we find no other variation among them than what ſeems neceſſarily to ariſe from their different conceptions of the ſubject. Boetius himſelf can in this reſpect be conſidered no otherwiſe than as a modern; and he himſelf does not pretend to an inveſtigation of the genera, but contents himſelf with a bare repetition of what is to be found in the writings of the ancients reſpecting them: and when it is conſidered that in his time only the diatonic genus was in uſe; the other genera having been rejected for their intricacy, and other reaſons, long before, it muſt appear next to impoſſible that he could contribute much to the explanation of this moſt abſtruſe part of the ſcience; and the exceſſive caution with which he delivers his ſentiments touching them, is a kind of proof of the difficulties he had to encounter.

If this was the caſe with Boetius, how little is to be expected from the writers of later times. In ſhort, for information as to the doctrine of the genera, we are under an indiſpenſible neceſſity of recurring to the ancients; and it will be much ſafer to acquieſce in their relations, defective and obſcure as they are, than to truſt to the gloſſes of modern authors, who in general are more likely to miſlead than direct us: for this reaſon it has been thought proper to reject an infinitude of ſchemes, diagrams, and explanations, which the fertile inventions of the moderns have produced to exemplify the conſtitution of the chromatic and enarmonic genera, and that from a thorough perſuaſion that many of them are erroneous.

But it ſeems the conſiderations above ſuggeſted were not ſufficient to deter a writer, who flouriſhed in the ſixteenth century, who, to ſay the leaſt of him, appears to have been one of the ableſt theoriſts of modern times, from attempting to develope the doctrine of the genera, and to deliver it free from thoſe difficulties.

The author here meant is Franciſcus Salinas, a Spaniard by birth, and who, under all the diſadvantages of incurable blindneſs, applied himſelf with the moſt aſtoniſhing patience and perſeverance to the ſtudy of the theory of muſic; and in many reſpects the ſucceſs of his

reſearches has been equal to the degree of his reſolution. His ſyſtem of the genera is much too copious to be inſerted here, it is therefore referred to a part of this work reſerved for an account of him and his writings.

Kircher has given a compendious view of the genera *, together with the proportions of their component intervals in the tetrachord of each genus, by the help whereof we are enabled to form an idea of thoſe various progreſſions that conſtitute the difference between the one and the other of them. But though he profeſſes to have in his poſſeſſion, and to have peruſed the manuſcripts of Ariſtoxenus, Archytas, Didymus, Eratoſthenes, and others †, he gives the preference to Ptolemy in reſpect of his diviſion of the genera, and apparently follows the elder Galilei, not indeed in the order, but in the method of repreſentation. According to him the ſpecies of the diatonic genus are five; namely, the ditonic or Pythagorean, the ſoft, the ſyntonous, the toniac, and the equable. The following is his definition and repreſentation of them ſeverally in their order, with his remarks on each.

DITONIC or PYTHAGOREAN DIATONIC I.

'The Pythagorean or ditonic diatonic conſiſts in a progreſſion from 'the grave to the acute, through the tetrachord, by the interval of 'a leſſer ſemitone, and two tones, each in the ratio of 8 to 9; and 'contrarywiſe from the acute to the grave by two tones and a leſſer 'ſemitone, as in the following example.

TETRACHORD

6144 — Hypate meſon

Seſquioctave tone, 8 to 9

6912 — Lychanos hypaton

Seſquioctave, tone 8 to 9

7776 — Parypate hypaton

Leſſer ſemitone, 243 to 256

8192 — Hypate hypaton

* Muſurg. tom. I. lib. III. cap. xiii.

† Meibomius queſtions the truth of this aſſertion, upon the ſuppoſition that Archytas, Didymus, and Eratoſthenes are to be reckoned among the ſcriptores perditi. It is true that, excepting a ſmall aſtronomical tract of Eratoſthenes, there is nothing of the writing of either of them in print. But it is ſaid that in the library of St. Mark at Venice there are even now a great number of Greek manuſcripts that were brought into Italy upon the ſacking of Conſtantinople, and among them it is not impoſſible that ſome tracts of the abovenamed writers might be found.

Other authors there are, particularly Franchinus, Vicentino, Vincentio Galilei, and Zarlino, that profeſs to treat of the genera; but it is to be noted that all their intelligence is derived from the ſame ſource, namely, the writings of Ariſtoxenus, Euclid, Ariſtides Quintilianus, and more eſpecially Ptolemy; and therefore we find no other variation among them than what ſeems neceſſarily to ariſe from their different conceptions of the ſubject. Boetius himſelf can in this reſpect be conſidered no otherwiſe than as a modern; and he himſelf does not pretend to an inveſtigation of the genera, but contents himſelf with a bare repetition of what is to be found in the writings of the ancients reſpecting them: and when it is conſidered that in his time only the diatonic genus was in uſe; the other genera having been rejected for their intricacy, and other reaſons, long before, it muſt appear next to impoſſible that he could contribute much to the explanation of this moſt abſtruſe part of the ſcience; and the exceſſive caution with which he delivers his ſentiments touching them, is a kind of proof of the difficulties he had to encounter.

If this was the caſe with Boetius, how little is to be expected from the writers of later times. In ſhort, for information as to the doctrine of the genera, we are under an indiſpenſible neceſſity of recurring to the ancients; and it will be much ſafer to acquieſce in their relations, defective and obſcure as they are, than to truſt to the gloſſes of modern authors, who in general are more likely to miſlead than direct us: for this reaſon it has been thought proper to reject an infinitude of ſchemes, diagrams, and explanations, which the fertile inventions of the moderns have produced to exemplify the conſtitution of the chromatic and enarmonic genera, and that from a thorough perſuaſion that many of them are erroneous.

But it ſeems the conſiderations above ſuggeſted were not ſufficient to deter a writer, who flouriſhed in the ſixteenth century, who, to ſay the leaſt of him, appears to have been one of the ableſt theoriſts of modern times, from attempting to develope the doctrine of the genera, and to deliver it free from thoſe difficulties.

The author here meant is Franciſcus Salinas, a Spaniard by birth, and who, under all the diſadvantages of incurable blindneſs, applied himſelf with the moſt aſtoniſhing patience and perſeverance to the ſtudy of the theory of muſic; and in many reſpects the ſucceſs of his

reſearches has been equal to the degree of his reſolution. His ſyſtem of the genera is much too copious to be inſerted here, it is therefore referred to a part of this work reſerved for an account of him and his writings.

Kircher has given a compendious view of the genera *, together with the proportions of their component intervals in the tetrachord of each genus, by the help whereof we are enabled to form an idea of thoſe various progreſſions that conſtitute the difference between the one and the other of them. But though he profeſſes to have in his poſſeſſion, and to have peruſed the manuſcripts of Ariſtoxenus, Archytas, Didymus, Eratoſthenes, and others †, he gives the preference to Ptolemy in reſpect of his diviſion of the genera, and apparently follows the elder Galilei, not indeed in the order, but in the method of repreſentation. According to him the ſpecies of the diatonic genus are five; namely, the ditonic or Pythagorean, the ſoft, the ſyntonous, the toniac, and the equable. The following is his definition and repreſentation of them ſeverally in their order, with his remarks on each.

DITONIC or PYTHAGOREAN DIATONIC I.

'The Pythagorean or ditonic diatonic conſiſts in a progreſſion from 'the grave to the acute, through the tetrachord, by the interval of 'a leſſer ſemitone, and two tones, each in the ratio of 8 to 9; and 'contrarywiſe from the acute to the grave by two tones and a leſſer 'ſemitone, as in the following example.

TETRACHORD

6144 — Hypate meſon

Seſquioctave tone, 8 to 9

6912 — Lychanos hypaton

Seſquioctave, tone 8 to 9

7776 — Parypate hypaton

Leſſer ſemitone, 243 to 256

8192 — Hypate hypaton

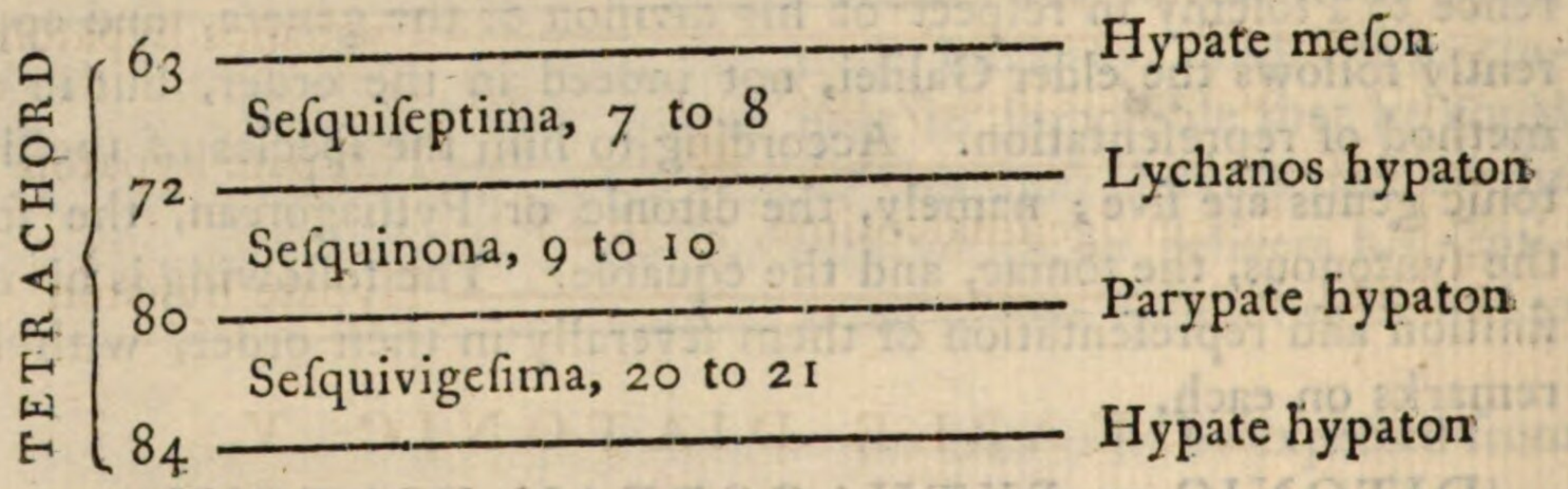
* Muſurg. tom. I. lib. III. cap. xiii.

† Meibomius queſtions the truth of this aſſertion, upon the ſuppoſition that Archytas, Didymus, and Eratoſthenes are to be reckoned among the ſcriptores perditi. It is true that, excepting a ſmall aſtronomical tract of Eratoſthenes, there is nothing of the writing of either of them in print. But it is ſaid that in the library of St. Mark at Venice there are even now a great number of Greek manuſcripts that were brought into Italy upon the ſacking of Conſtantinople, and among them it is not impoſſible that ſome tracts of the abovenamed writers might be found.

'This kind of progreſſion is ſaid to have been held in great eſti-
'mation by the philoſophers, particularly Plato and Ariſtotle, as
'having a conformity with the compoſition of the world and with
'nature itſelf.

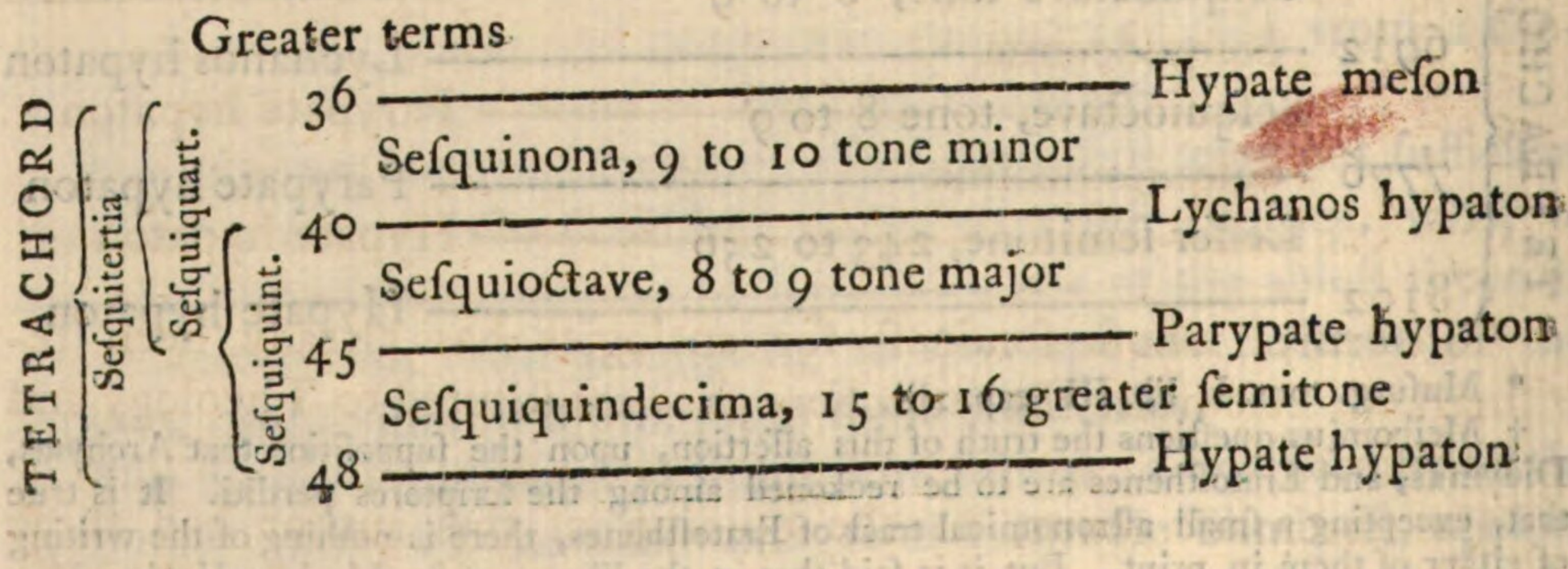
SOFT DIATONIC II.

'The ſecond or ſoft ſpecies of the diatonic genus proceeds from
'the grave to the acute by an interval, in the ratio of 20 to 21; the
'other intervals have a ratio, the one of 9 to 10, and the other of 7
'to 8, as is here repreſented.



SYNTONOUS DIATONIC III.

'The third ſpecies, diſtinguiſhed by the epithets ſyntonum inci-
'tatum, or haſtened, proceeds from the grave to the acute by
'an interval in the ratio of 15 to 16, or greater ſemitone, a greater
'tone 8 to 9, and a leſſer 9 to 10; and deſcends from the acute to
'the grave by the ſame intervals.



TONIAC DIATONIC IV.

'The toniac, the fourth ſpecies of the diatonic genus ſuppoſes 'ſuch a diſpoſition of the tetrachord as that the firſt and ſecond 'chords ſhall include an interval of 27 to 28; next an interval of 7 'to 8, and laſtly one of 8 to 9. Thus adjuſted it will aſcend from 'the grave to the acute, and on the contrary deſcend from the acute 'to the grave, as in the example.

Greater terms

TETRACHORD

168 —— Hypate meſon

Seſquioctave, 8 to 9

189 —— Lychanos hypaton

Seſquiſeptima, 7 to 8

216 —— Parypate hypaton

Seſquivigeſimaſeptima, 27 to 28

224 —— Hypate hypaton

EQUABLE DIATONIC V.

'The fifth and laſt ſpecies of this genus is the equable, proceed- 'ing in arithmetical progreſſion from the grave to the acute, by the 'ratios of 11 to 12, 10 to 11, and 9 to 10; and contrarywiſe from 'the acute to the grave.

TETRACHORD DIATESSARON

9 —— Hypate meſon

Seſquinona

10 —— Lychanos hypaton

Seſquidecima

11 —— Parypate hypaton

Seſquiundecima

12 —— Hypate hypaton

'Ptolemy, whoſe fondneſs for analogies has already been re- 'marked, reſembles the tetrachord thus conſtituted to Theology and 'Politics.'

The chromatic genus, in the opinion of this author had three ſpecies, the ancient, the ſoft, and the ſyntonous, thus ſeverally deſcribed by him.

A N-

ANCIENT CHROMATIC I.

' This ſpecies proceeded by two ſemitones and a trihemitone,
' that is to ſay, it aſcended from the grave to the acute by a leſſer
' ſemitone; then by an interval ſomewhat greater, as being in the
' ratio of 81 to 76; and laſtly by an incomplete trihemitone, in the
' ratio of 19 to 16.

TETRACHORD DIATESSARON

6144 — Hypate meſon
Trihemitone, 16 to 19
7296 — Lychanos hypaton
Semitone, 76 to 81
7776 — Parypate hypaton
Leſſer ſemitone, 243 to 256
8192 — Hypate hypaton

SOFT CHROMATIC II.

' The chromatic molle was ſo diſpoſed, as that the loweſt chord
' and the next to it had a ratio of 27 to 28, the ſecond and third 14
' to 15, and the third and fourth 5 to 6.

TETRACHORD

105 — Hypate meſon
Seſquiquinta, 5 to 6
126 — Lychanos hypaton
Seſquiquartadecima, 14 to 15
135 — Parypate hypaton
Seſquivigeſimaſeptima, 27 to 28
140 — Hypate hypaton

SYNTONOUS CHROMATIC III.

' In the chromatic ſyntonum the firſt and ſecond chords, reckon-
' ing from the loweſt, were diſtant by an interval in the proportion
' of 22 to 21, the ſecond was removed from the third by an interval
' in the proportion of 12 to 11, and the third from the fourth by
' one of a ſeſquiſexta proportion, which is as 6 to 7, as here is ſhewn.

TETRA-

TETRACHORD
66 ——— Hypate meſon
Seſquiſexta, 6 to 7
77 ——— Lychanos hypaton
Seſquiundecima, 11 to 12
84 ——— Parypate hypaton
Seſquivigeſima prima, 21 to 22
88 ——— Hypate hypaton

'Of this genus it is ſaid by Macrobius that it was deemed to be of 'an effeminate nature, and that it had a tendency to enervate the 'mind *; for which reaſon the ancients very ſeldom uſed it; Ptole- 'my reſembles this tetrachord to œconomics.'

The enarmonic, the third and laſt in order of the genera, ſeems to have been originally ſimple or undivided into ſpecies; but the refinements of Ptolemy led to a variation in the order of the enarmonic progreſſion, which formed that ſpecies diſtinguiſhed by his name, ſo that it may be ſaid the enarmonic contained two ſpecies, the ancient and the Ptolemaic. Kircher thus defines it.

ANCIENT ENARMONIC I.

'In this ſpecies the tetrachord aſcended by two dieſes, and an in- 'complete ditone, the ſeveral ratios whereof were as denoted by the 'underwritten numbers.

TETRACHORD
6144 ——— Hypate meſon
Ditone
7776 ——— Lychanos hypaton
Dieſis
7984 ——— Parypate hypaton
Dieſis
8192 ——— Hypate hypaton

ENARMONIC OF PTOLEMY II.

'The Ptolemaic enarmonic, which was ſcarce formed before both 'the chromatic and enarmonic grew into diſeſteem, aſcended from 'the moſt grave to the next chord by an interval in the ratio of 45 'to

* Vide Macrob. in Somn. Scipion. Lib. II. cap. iv.

' to 46, thence by one of 23 to 24, and laſtly by one of 4 to 5,
' which is ſaid to be a true enarmonic ditone.

TETRACHORD

276 ——— Hypate meſon

Seſquiquarta, 4 to 5

345 ——— Lychanos hypaton

Seſquivigeſima tertia, 23 to 24

360 ——— Parypate hypaton

Seſquiquadrageſimaquinta, 45 to 46

368 ——— Hypate hypaton

Dr. Wallis has treated this ſubject of the genera in a manner worthy of that penetration and ſagacity for which he is admired. It has been mentioned, that of all the ancients Ptolemy has entered the moſt minutely into a diſcuſſion of this doctrine; he has delivered the ſentiments of many writers, which but for him we ſhould ſcarcely have known, and has adjuſted the ſpecies in ſuch a way as to leave it a doubt whether even Ariſtoxenus or he be the neareſt the truth: Dr. Wallis publiſhed an edition of this valuable author, with a tranſlation and notes of his own; to this work he has added an appendix, wherein is contained a very elaborate and judicious diſquiſition on the nature of the ancient muſic, and a compariſon of the ancient ſyſtem with that of the moderns. In this he has taken great pains to explain, as far as it was poſſible, the genera: the enarmonic and chromatic he gives up, and ſpeaks of as irrecoverably loſt; but of the diatonic genus he expreſſes himſelf with great clearneſs and preciſion; for, after defining, as he does very accurately, the ſeveral ſpecies of the diatonic, he ſays, that one only of them is now in practice; and, as touching the queſtion which of them that one is, he gives the opinions of ſeveral muſicians, together with his own; and laſtly ſhews how very ſmall and inconſiderable muſt have been the difference between thoſe diviſions that diſtinguiſh the ſpecies of the diatonic genus. His words are nearly theſe.

' It now remains to diſcuſs one point, which we have referred to
' this place, the genera and their colours or ſpecies. We have be-
' fore ſaid that for many years only one of them all has been received
' in practice, and this is by all allowed to be the diatonic, the enar-
' monic and all the chromatics, and the other diatonics being laid
' aſide.

'aſide. But it is matter of diſpute whether it is the intenſe diato-
'nic of Ariſtoxenus, or the ditonic diatonic of Ptolemy, or the in-
'tenſe diatonic of the ſame Ptolemy; that is to ſay, when we ſing
'a diateſſaron from MI or LA in the grave towards the acute in the
'ſyllables FA SOL LA, which expreſs ſo many intervals, to aſcertain
'the degree of magnitude which each of theſe intervals contains.
'The firſt opinion is that of Ariſtoxenus, who when he made the
'diateſſaron to conſiſt of two tones and a half, would have the great-
'eſt ſound FA, to be a hemitone, and the other two SOL LA, to be
'whole tones, which is the intenſe diatonic of this author *. And in
'this manner ſpeak all muſicians even to this day, at leaſt when they
'do not profeſs to ſpeak with nicety. But thoſe who enter more
'minutely into the matter, will have what is underſtood by a hemi-
'tone to be, not exactly the half of, but ſomewhat a little leſs than a
'tone; and this is demonſtrated by Euclid, who in other reſpects
'was an Ariſtoxenean, though I do not know whether he was the firſt
'that did it. Euclid I ſay, admiting the principles of the Pythago-
'reans in eſtimating the intervals of ſounds by ratios; and admit-
'ting alſo that a tone is in a ſeſquioctave ratio, in his harmonic in-
'troduction treats of the tones and hemitones in the ſame manner as
'do the Ariſtoxeneans; yet in his ſection of the canon he ſhews
'that what remains after ſubtracting two tones from a diateſſaron is
'leſs than a hemitone, and is called a limma, which is in the ratio
'of $\frac{2}{2}\cdot\frac{5}{4}\frac{6}{3}$; for if a diateſſaron contains two tones and a half, then a
'diapaſon, which is two diateſſarons and one tone, muſt contain ſix
'tones; but a diapaſon, which has a duple ratio, is leſs than ſix
'tones, for a ſeſquioctave ratio ſix times compounded is more than
'duple †; a diapaſon therefore is leſs than ſix tones, and a diateſſaron
'leſs than two tones and a half.

CHAP. VIII.

'THE next opinion is that of thoſe, who, inſtead of a tone,
'tone, and hemitone, ſubſtitute a tone, tone, and limma.
'And theſe, if at any time they call it a hemitone, would yet have

* See the Synopſis, p. 87, of Dr. Wallis's Appendix, herein before given.
† This is excellently demonſtrated by Boetius, lib. III. cap. i.

'us underſtand them to mean a limma, which differs very little from 'a hemitone, and therefore they will have the ſyllable LA to expreſs 'a limma, and the ſyllables SOL LA two tones, that is $\frac{2}{2}\frac{5}{4}\frac{6}{3}\times\frac{9}{8}\times\frac{9}{8}=\frac{4}{3}$, 'and this is the ditonic diatonic of Ptolemy, but which was ſhewn 'by Euclid before Ptolemy; and it was alſo the diatonic of Eratoſ-'thenes, as has been ſaid above; and theſe have been the ſentiments 'of muſicians almoſt as low as to our own times. Ptolemy himſelf, 'though he has given other kinds of diatonic genera, does not reject 'this; and the reſt who have ſpoken of this matter in a different 'way, did it more out of compliance with cuſtom, than that they 'adhered to any contrary opinion of their own, as Ptolemy himſelf 'tells us, lib. I. cap. xvi. And thus Boetius divides the tetrachord, 'and after him Guido Aretinus, Faber Stapulenſis, Glareanus, and 'others; it is true, however, that, about the beginning of the ſix-'teenth century, Zarlino, and alſo Kepler reſumed the intenſe diatonic 'of Ptolemy, and attempted to bring it into practice *; but for this 'they were cenſured by the elder Galileo †.

'The third opinion therefore is that of thoſe who, following Pto-'lemy, ſubſtituted in the place of a hemitone or limma, a ſeſquide-'cimaquinta ratio $\frac{16}{15}$, which they alſo call a hemitone; and for the 'tones, both which the others had made to be in the ratio $\frac{9}{8}$, one 'they made to be in the ratio $\frac{10}{9}$, ſo that they compounded the dia-'teſſaron by the ratios $\frac{16}{15}\times\frac{9}{8}\times\frac{10}{9}=\frac{4}{3}$, expreſſing by the ſyllable FA the 'ratio $\frac{16}{15}$, by SOL that of $\frac{9}{8}$, and by LA $\frac{10}{9}$ ‡, which is the intenſe 'diatonic of Ptolemy, and the diatonic of Didymus, except that he, 'changing the order, has $\frac{16}{15}\times\frac{10}{9}\times\frac{9}{8}=\frac{4}{3}$.

'And as they called $\frac{16}{15}$ a greater hemitone, they made the leſſer '$\frac{25}{24}$, which with $\frac{16}{15}$ completes the leſſer tone, as $\frac{16}{15}\times\frac{25}{24}=\frac{10}{9}$, and is 'the difference, as they ſay, between the greater and the leſſer third.

* Dr. Wallis has a little miſtaken Kepler in this place: it was not the intenſe diatonic of Ptolemy, but of Didymus $\frac{16}{15}\times\frac{10}{9}\times\frac{9}{8}=\frac{4}{3}$ that he was for reſuming. Joann. Keplerus Harm. Mundi, lib. III. cap. vii.

† Galileo did not contend for the ditonic diviſion of the diatonic, but for the intenſe of Ariſtoxenus, defined in his ſynopſis of the genera herein before given; the reaſon whereof was, that he was a luteniſt, and the performers on that inſtrument unanimouſly prefer the Ariſtoxenean diviſion.

‡ It may be proper to remark, that in this and other inſtances of ſolmiſation that occur in the paſſage now quoting, Dr. Wallis uſes the method of ſolmiſation by the tetrachords, in which the ſyllables UT RE are rejected, and which took place about the year 1650. See Clifford's Collection of divine Services and Anthems, printed in the year 1664.

Mer-

'Merſennus adds two other hemitones, one in the ratio $\frac{1}{1}\frac{3}{2}\frac{5}{8}$, which 'with $\frac{1}{1}\frac{6}{5}$ completes $\frac{9}{8}$ the greater tone, and the other $\frac{2}{2}\frac{7}{5}$, which with 'also makes up $\frac{9}{8}$ the greater tone *.'

The above is an impartial ſtate of the ſeveral opinions that at different times have prevailed among the moderns, touching the preference of one or other of the ſpecies of the diatonic genus to the reſt. Dr. Wallis is certainly right in ſaying, that to the time of Boetius, and ſo on to the end of the ſixteenth century, the ditonic diatonic of Ptolemy prevailed, for ſo much appears by the writings of thoſe ſeveral authors; and as to the latter part of his aſſertion, it is confirmed by the preſent practice, which is to conſider the tetrachord as conſiſting of a ſeſquidecimaquinta ratio, a tone major, and a tone minor, and to this method of diviſion he gives the preference; but he cloſes his relation with a remark that ſhews of how very little importance all enquiries are, which tend to adjuſt differences too minute for a determination by the ſenſes, and cognizable only by the underſtanding, and that too not till after a laborious inveſtigation. His words are theſe:

'But as thoſe ſpecies which we have mentioned differ ſo very 'little from one another, that the niceſt ear can ſcarcely, if at all, 'diſtinguiſh them, ſince the ratio $\frac{1}{1}\frac{6}{5}$ from the ratio of a limma $\frac{2}{2}\frac{5}{4}\frac{6}{3}$, 'as alſo the ratio of a greater tone $\frac{9}{8}$ from $\frac{1}{1}\frac{0}{9}$ differ only by the ra- 'tio $\frac{8}{8}\frac{1}{0}$, which is ſo ſmall that the ear can with difficulty diſcriminate 'between the one and the other of the two tones; we muſt therefore 'judge not ſo much by our ſenſes, which opinion ought moſt to be 'regarded, becauſe the ſenſes would without any difficulty admit any 'of them, but reaſon greatly favours the laſt †.'

There is yet another writer, with whoſe ſentiments, and a few obſervations thereon, we ſhall conclude our account of the genera, this was Dr. John Chriſtopher Pepuſch, a man of no ſmall eminence in his profeſſion, and who for many years enjoyed, at leaſt in England, the reputation of being the ableſt theoriſt of his time. In a letter to Mr. Abraham de Moivre, printed in the Philoſophical Tranſactions of the year 1746, N° 481, he propoſes to throw ſome light upon the obſcure ſubject of the ancient ſpecies of muſic; and after premiſing that, according to Euclid, the ancient ſcale muſt have been compoſed of tones major and

* Append. de Vet. Harm. 317, et ſeq.
† Ibid. pag. 318.

limmas, without the intervention of tones minor, which in numbers are thus to be expreſſed, $\frac{9}{8}$ $\frac{256}{243}$ $\frac{9}{8}$ $\frac{9}{8}$ $\frac{256}{243}$ $\frac{9}{8}$ $\frac{9}{8}$, he proceeds in theſe words:

'It was uſual among the Greeks to conſider a deſcending as well as 'an aſcending ſcale, the former proceeding from acute to grave pre- 'ciſely by the ſame intervals as the latter did from grave to acute. 'The firſt ſound in each was the proſlambanomenos. The not diſ- 'tinguiſhing theſe two ſcales, has led ſeveral learned moderns to ſup- 'poſe that the Greeks in ſome centuries took the proſlambanomenos 'to be the loweſt note in their ſyſtem, and in other centuries to be 'the higheſt; but the truth of the matter is, that the proſlambano- 'menos was the loweſt or higheſt note according as they conſider- 'ed the aſcending or deſcending ſcale. The diſtinction of theſe is con- 'ducive to the variety and perfection of melody; but I never yet met 'with above one piece of muſic where the compoſer appeared to have 'any intelligence of this kind. The compoſition is about one hundred 'and fifty or more years old, for four voices, and the words are, "Vobis datum eſt noſcere myſterium regni Dei, cæteris autem in para- "bolis; ut videntes non videant, et audientes non intelligant." By the 'choice of the words the author ſeems to allude to his having per- 'formed ſomething not commonly underſtood.' The doctor then exhibits an octave of the aſcending and deſcending ſcales of the diatonic genus of the ancients, with the names for their ſeveral ſounds, as alſo the correſponding modern letters, in the following form.

A		Proſlambanomenos	$\frac{8}{9}$	g
B	$\frac{9}{8}$	Hypate hypaton	$\frac{243}{256}$	f
C	$\frac{256}{243}$	Parypate hypaton	$\frac{9}{8}$	e
D	$\frac{9}{8}$	Lychanos hypaton	$\frac{8}{9}$	d
E	$\frac{9}{8}$	Hypate meſon	$\frac{243}{256}$	c
F	$\frac{256}{243}$	Parypate meſon	$\frac{8}{9}$	b
G	$\frac{9}{8}$	Lychanos meſon	$\frac{8}{9}$	a
a	$\frac{9}{8}$	Meſe		G

He obſerves, that in the octave above given, the Proſlambanomenos, Hypate hypaton, Hypate meſon, and Meſe were called Stabiles, from their remaining fixed throughout all the genera and ſpecies; and that the other four, being the Parypate hypaton, Lychanos hypaton,

Parypate meſon, and Lychanos meſon, were called Mobiles, becauſe they varied according to the different ſpecies and varieties of muſic.

He then proceeds to determine the queſtion what the genera and ſpecies were, in this manner. 'By genus and ſpecies was underſtood a diviſion of the diateſſaron, containing four ſounds, into three intervals. The Greeks conſtituted three genera, known by the names of Enarmonic, Chromatic, and Diatonic. The chromatic was ſubdivided into three ſpecies, and the diatonic into two. The three chromatic ſpecies were, the chromaticum molle, the ſeſquialterum, and the toniæum. The two diatonic ſpecies were, the diatonicum molle, and the intenſum; ſo that they had ſix ſpecies in all. Some of theſe are in uſe among the moderns, but others are as yet unknown in theory or practice.

'I now proceed to define all theſe ſpecies by determining the intervals of which they ſeverally conſiſted, beginning by the diatonicum intenſum as the moſt eaſy and familiar.

'The diatonicum intenſum was compoſed of two tones and a ſemitone; but, to ſpeak exactly, it conſiſts of a ſemitone major, a tone minor, and a tone major. This is in daily practice, and we find it accurately defined by Didymus in Ptolemy's Harmonics, publiſhed by Dr. Wallis *.

* Dr. Wallis has remarked in the paſſage above-cited, that it had long been a matter of controverſy whether the ſyſtem of the moderns correſponded with the intenſe diatonic of Ariſtoxenus, the ditonic diatonic of Ptolemy, or rather Pythagoras, or the intenſe of Ptolemy; and though he ſeems to incline to the opinion of Zarlino, that the muſic now in uſe is no other than the intenſe diatonic of Ptolemy, it is far from clear that the moderns have gone farther than barely to admit in theory and in a courſe of numerical calculation the latter as the moſt eligible. Salinas, lib. III. cap. xiii. contends for an equality of tones, and for the conſequent neceſſity of diſtributing throughout the diapaſon ſyſtem thoſe intervals by which the greater tones exceed the leſſer.

Bontempi, Hiſt. Muſ. 188. ſays that that temperament which makes the intervals irrational, is to be looked upon as a divine thing, and aſſerts that no where in Italy, nor indeed in Europe, does the practice of diſcriminating between the greater and leſſer tone prevail in the tuning of the organ, and that the organ of St. Mark's chapel at Venice, where he himſelf ſung for ſeven years, continued to be tuned without regard to this diſtinction, notwithſtanding what Zarlino had written and the efforts he made to get it varied.

The practice has long been in tuning the organ, and ſuch like inſtruments, to make the fifths as flat and the thirds as ſharp as the ear will bear, which neceſſarily induces an equality in the tones.

Laſtly, Dr. Smith, in his Harmonics, ſecond edition, pag. 33, aſſerts that ſince the invention of a temperament, the ancient ſyſtems of ditonic diatonic, intenſe diatonic, &c. have

'The next ſpecies is the diatonicum molle, as yet undiſcovered, as 'far as appears to me, by any modern author. Its component inter-'vals are the ſemitone major, an interval compoſed of two ſemi-'tones minor, and the complement of theſe two to the fourth, being 'an interval equal to a tone major and an enarmonic dieſis.

'The third ſpecies is the chromaticum toniæum, its component in-'tervals are a ſemitone major ſucceeded by another ſemitone major, 'and laſtly, the complement of theſe two to the fourth, commonly 'called a ſuperfluous tone.

'The fourth ſpecies is the chromaticum ſeſquialterum, which is 'conſtituted by the progreſſion of a ſemitone major, a ſemitone mi-'nor, and a third minor. This is mentioned by Ptolemy as the 'chromatic of Didymus *. Examples among the moderns are 'frequent.

'The fifth ſpecies is the chromaticum molle. Its intervals are 'two ſubſequent ſemitones minor, and the complements of theſe two 'to the fourth, that is an interval compounded of a third minor and 'an enarmonic dieſis. This ſpecies I never met with among the 'moderns.

'The ſixth and laſt ſpecies is the enarmonic. Salinas and others 'have determined this accurately †. Its intervals are the ſemitone 'minor, the enarmonic dieſis, and the third major.

'Examples of four of theſe ſpecies may be found in modern prac-'tice. But I do not know of any theoriſt who ever yet determined 'what the chromaticum toniæum of the ancients was; nor have any 'of them perceived the analogy between the chromaticum ſeſquialte-'rum and our modern chromatic. The enarmonic, ſo much admir-'ed by the ancients, has been little in uſe among our muſicians as 'yet. As to the diatonicum intenſum it is too obvious to be miſ-'taken.'

The above-cited letter is very far from being what the title of it indicates, an explanation of the various genera and ſpecies of muſic among the ancients. To ſay the beſt of it, it contains very little more than is to be met with in almoſt every writer on the ſubject of

have juſtly been laid aſide. So that after ſo many opinions to the contrary, it may very well be doubted whether the diatonicum intenſum is in daily practice or not.

* Lib. II. cap. xiv.

† Salinas de Muſica, lib. III. cap. viii.

ancient

ancient muſic, except that ſeemingly notable diſcovery, that the ancients made uſe of both an aſcending and deſcending ſcale, the conſideration whereof will be preſently reſumed. As to the ſix ſpecies above enumerated, the doctor ſays four are in modern practice, but of theſe four he has thought proper to mention only two, namely, the diatonicum intenſum, and the chromaticum ſeſquialterum; and it is to be wiſhed that he had referred to a few of thoſe examples of the four, which he ſays are to be found, or at leaſt that he had mentioned the authors in whoſe works the latter two of them occur; and the rather, becauſe Dr. Wallis aſſerts that the enarmonic, all the chromatics, and all but one of the diatonics, for many years, he might have ſaid centuries, have been laid aſide.

As to his aſſertion that the Greeks made uſe of both an aſcending and deſcending ſcale, it is to be remarked, that there are no notices of any ſuch diſtinction in the writings of any of the Greek harmonicians. The ground of it is a compoſition about one hundred and fifty years old, in the year 1746, to the words of a verſe in the goſpel of St. Mark *, ſo obſcure, if we conſider them as referring to the muſic, that they ſerve more to excite, than allay curioſity; and Dr. Pepuſch could not have wiſhed for a fairer opportunity of diſplaying his learning and ingenuity than the ſolution of this muſical enigma afforded him. Nay, had he condeſcended to give this compoſition in the ſtate he found it, or had he barely referred to it, the world would have been ſenſible of the obligation. The only excuſe that can be alledged for that incommunicative diſpoſition which the whole of this letter betrays, is, that the author of it ſubſiſted for many years by teaching the precepts of his art to young ſtudents, and it was not his intereſt to divulge them. How far the compoſition abovementioned, which is not yet two hundred years old, is an evidence of the practice of the ancient Greeks, will not here be enquired into; but it may gratify the curioſity of the reader to be told that the author of it was Coſtanza Porta, a Franciſcan monk, and chapel-maſter in the church of St. Mark at Ancona, and that it is publiſhed at the end of a book printed at Venice in 1600, entitled, L' Artuſi Overo delle Imperfettioni della moderna Muſica, written by Giovanni Maria Artuſi, an eccleſiaſtic of Bologna, of whom a particular account will hereafter be given. As to the compoſition, it is for four voices, and is as follows.

* Chap. iv. ver. 9.

Vo - bis datum eſt noſce Miſte- -

Vo - bis da-tum eſt noſ-ce Miſ-te - - -ri - um no - - -

Vo - - bis da-tum eſt

Vo - - bis datum eſt noſce Miſte-ri-um no-ſce Miſte-ri-

-rium no-ſce Miſteri - -um Vo - - bis datum eſt no-

-ſce Miſteri- -um Vo - bis datum eſt no-ſce Miſ- -

noſce Miſte- - - -ri - um Vo - - bis datum eſt noſce Miſ-

-um Vo - bis datum eſt no-ſce Miſ-te - - -ri -

ſce Miſteri-um Regni De-i Ceteris autem in Pa-ra-bo-lis

-te-ri-um Regni De-i Ceteris autem in Pa-ra-bo-

-te-ri-um Regni De-i Ce-

um Regni De i Ce-

-lis Ut vi-den-tes non vi-de-ant,

-teris autem in Parabo-lis Ut vi-den tes non vi-de-

-teris autem in Para-bo-lis Ut vi-den tes non vi-de-

Et au-di - en - tes et audi - en - - - tes non in -

Et audi - en - tes et audi - en - - tes non in - telligant non

- ant Et audi - - en - tes non in - tel - li - gant non in -

- ant Et audi - en - tes non in - tel - li - gant non in -

- tel - - - li - - gant Ut vi - den - tes non

in - - tel li - - - gant Ut vi - den - tes non

- tel - - li - gant Ut vi - den - - - - tes ut vi - den -

- tel - - - li - gant Ut vi - den - tes non vi - de - ant ut vi - den

vi-de-ant, et au-di-en-tes et audi--en

vi-de-ant, et au-di--en-tes et audi-en--tes

--tes non vi---de-ant, et au-di-en-tes non in-tel-

--tes non vi---de-ant, et au-di-en-tes non in-tel-

-tes non in-tel---li--gant.

non in-tel-le-gant non in-tel--li---gant.

---li-gant non in-tel---li--gant.

----li-gant non in-tel---li--gant.

Artuſi obſerves upon this compoſition, which, the better to ſhew the contrivance of it, is here given in ſcore, that it is a motet for four voices, and that it may be ſung two ways, that is to ſay, firſt, as the cliffs direct that are placed neareſt to the notes, and afterwards turning the top of the book downwards, from the right to the left; taking the extreme cliff for a guide in naming the notes; the conſequence whereof will be, that the baſe will become the ſoprano, the tenor the contralto, the contralto the tenor, and the ſoprano the baſe. Beſides this he ſays that the ſecond time of ſinging it, b muſt be aſſumed for ♯, and in other inſtances FA for MI. He concludes with a remark upon the words of this motet, that they indicate that it is not given to every one to underſtand compoſitions of this kind.

Upon the example above adduced the remark is obvious, that it falls ſhort of proving the uſe of both an aſcending and deſcending ſcale by the Greek harmonicians. In a word, it is evidence of nothing more than the antiquity of a kind of compoſition, of which it is probable Coſtanza Porta might be the inventor, namely that, where the parts are ſo contrived as to be ſung as well backwards as forwards. In this he has been followed by Pedro Cerone, and other Spaniſh muſicians, and by our own countryman Elway Bevin and others, who ſeem to have thought that the merit of a muſical compoſition conſiſted more in the intricacy of its conſtruction than in its aptitude to produce the genuine and natural effects of fine harmony and melody on the mind of an unprejudiced hearer.

From the foregoing repreſentations of the genera, the reaſons for the early preference of the diatonic to the chromatic and enarmonic are clearly deducible; but notwithſtanding theſe and the conſequent rejection of the latter two by Guido and all his followers, the ingenuity of a few ſpeculative muſicians has betrayed them into an opinion that they are yet actually exiſting, and that with the addition of a few intervals, occaſionally to be interpoſed among thoſe that conſtitute the diapaſon, both the chromatic and enarmonic genera may be brought into practice.

The firſt of theſe bold aſſertors was Don Nicola Vicentino, an author of whom farther mention will hereafter be made. In a work entitled L'Antica Muſica ridotta alla Moderna Prattica, publiſhed by him at Rome in 1555, we find not only the tetrachord divided in ſuch a manner as ſeemingly to anſwer the generical diviſion of the ancients, but compoſitions actually exhibited, not only in one and

the

the other of the genera, but in each of them ſeverally, and in all of them conjunctly, and this with ſuch a degree of perſuaſion on his part that he had accurately defined them, as ſeems to ſet all doubt at defiance.

It is true that little leſs than this was to be expected from an author who profeſſes in the very title of his book to reduce the ancient muſic to modern practice, but that he has ſucceeded in his attempt ſo few are diſpoſed to believe, that in the general eſtimation of the moſt ſkilful profeſſors of the ſcience Vicentino's book has not its fellow for muſical abſurdity *. And of the juſtice of this cenſure few can entertain a doubt, that ſhall peruſe the following account of himſelf and of his ſtudies.

'To ſhew the world that I have not grudged the labour of many 'years, as well for my own improvement, as to be uſeful to others, 'in the preſent work I ſhall publiſh all the three genera with their 'ſeveral ſpecies and commixtures, and other inventions never given 'to the world by any body; and ſhall ſhew in how many ways it is 'poſſible to compoſe variouſly in the ſharp and flat modes: though 'at preſent there are ſome profeſſors of muſic that blame me for the 'trouble I take in this kind of learning, not conſidering the pains 'that many celebrated philoſophers have taken to explain the doc-'trine of harmonics; nevertheleſs I ſhall not deſiſt from my endea-'vours to reduce to practice the ancient genera with their ſeveral 'ſpecies by the means of voices and inſtruments; and if I ſhall fail 'in the attempt, I ſhall at leaſt give ſuch hints to men of genius as 'may tend to the improvement of muſic. We ſee by a compariſon 'of the muſic that we uſe at preſent, with that in practice a hundred, 'nay ten years ago, that the ſcience is much improved; and I doubt 'not but that theſe improvements of mine will appear ſtrange in 'compariſon with thoſe of our poſterity, and the reaſon is, that im-'provements are continually making of things already invented, but 'the invention and beginning of every thing is difficult; therefore I 'rejoice that God has ſo far favoured me, that in theſe days for his 'honour and glory I am able to ſhew my honourable face among the

* This is remarked by Gio Battiſta Doni, in his treatiſe entitled De Præſtantia Muſicæ veteris. Florent. 1647, and numberleſs other writers. Kircher however ſeems to entertain a different opinion of it; his ſentiments are given at length in a ſubſequent page of this chapter.

pro-

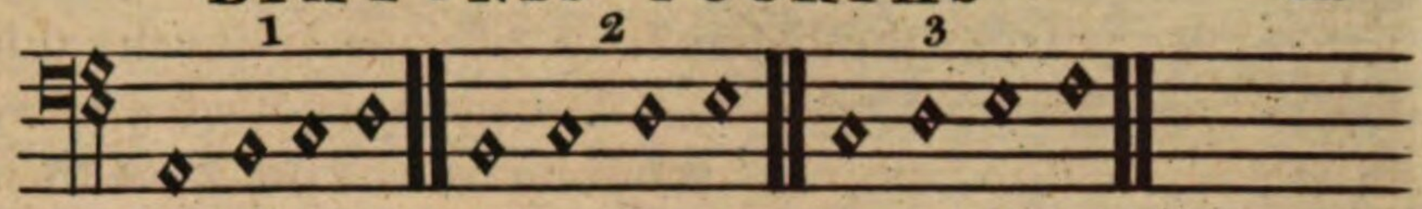
'professors of music. It is true that I have studied hard for many 'years; and as the divine goodness was pleased to enlighten me, I 'began this work in the fortieth year of my age, in the year 1550, 'the jubilee year, in the happy reign of pope Julius the third; since 'that I have gone on, and by continual study have endeavoured to 'enlarge it, and to compose according to the precepts therein con-'tained, as likewise to teach the same to many others, who have 'made some progress therein, and particularly in this illustrious 'town of Ferrara, where I dwell at present, to the inhabitants 'whereof I have explained both the theory and practice of the art; 'and many lords and gentlemen who have heard the sweetness of this 'harmony have been charmed therewith, and have taken pains to 'learn the same with exquisite diligence, because it really compre-'hends what the ancient writers shew. As to the diatonic genus, it 'was in use in the music sung at public festivals, and in common 'places, but the chromatic and enarmonic were reserved for the pri-'vate diversion of lords and princes, who had more refined ears than the 'vulgar, and were used in celebrating the praises of great persons and 'heroes. And, not to detract from the virtues of the ancient princes, 'the most excellent prince of Ferrara, Alfonso d' Este, after having 'very much countenanced me, has with great favour and facility 'learned the same, and thereby shewn to the world the image of a 'perfect prince; and he, as he has a most worthy name of eternal 'glory in arms, so has he acquired immortal honours by his skill in 'the sciences *.'

In the prosecution of this his notable design of accommodating the ancient music to modern practice, Vicentino has exhibited in the characters of modern notation a diatonic, a chromatic, and an enarmonic fourth and fifth in all their various forms. The following is an example of their several varieties, taken from the third book of his work above-cited, pages 59 a, 59 b, 62 b, et seq.

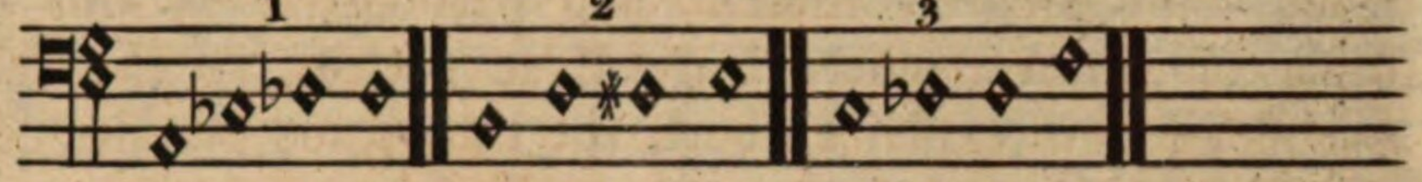
* Libro primo, cap. iv.

DIA-

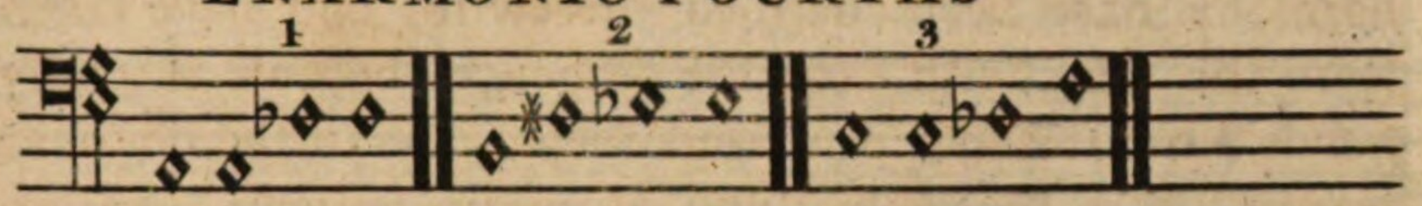
DIATONIC FOURTHS 119



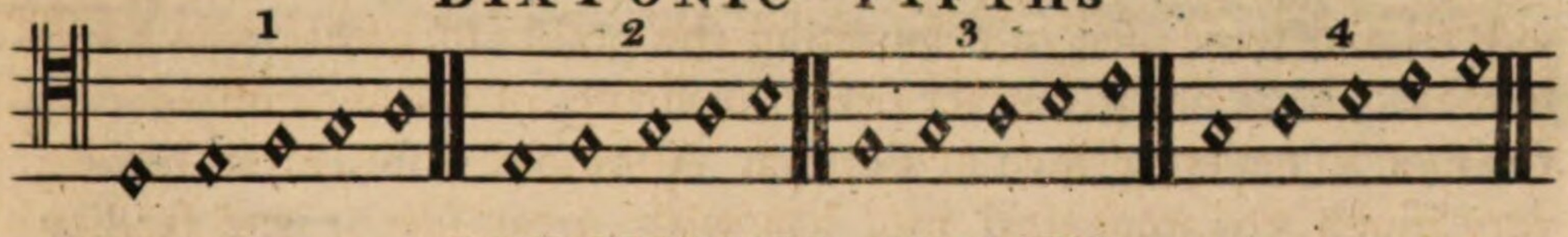
CHROMATIC FOURTHS



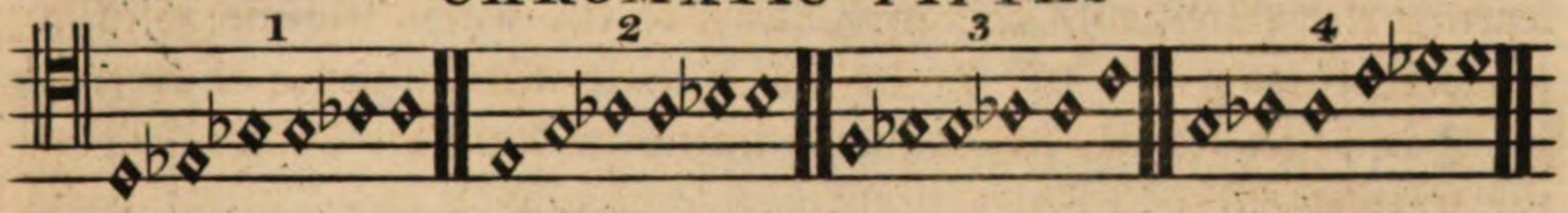
ENARMONIC FOURTHS



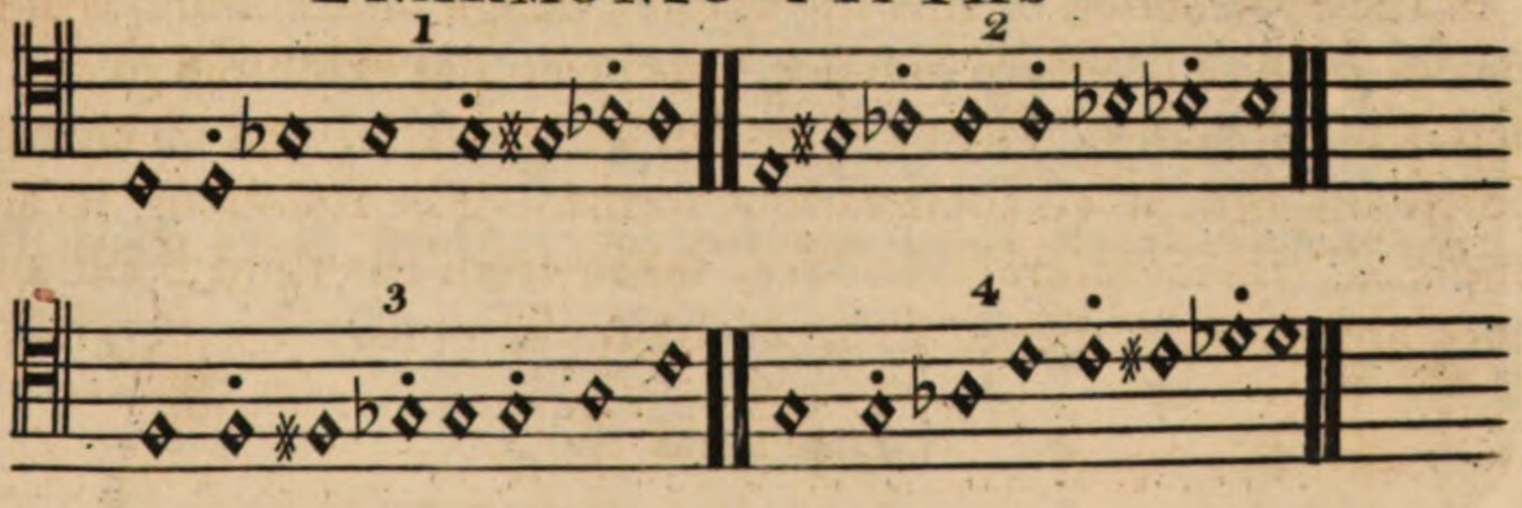
DIATONIC FIFTHS



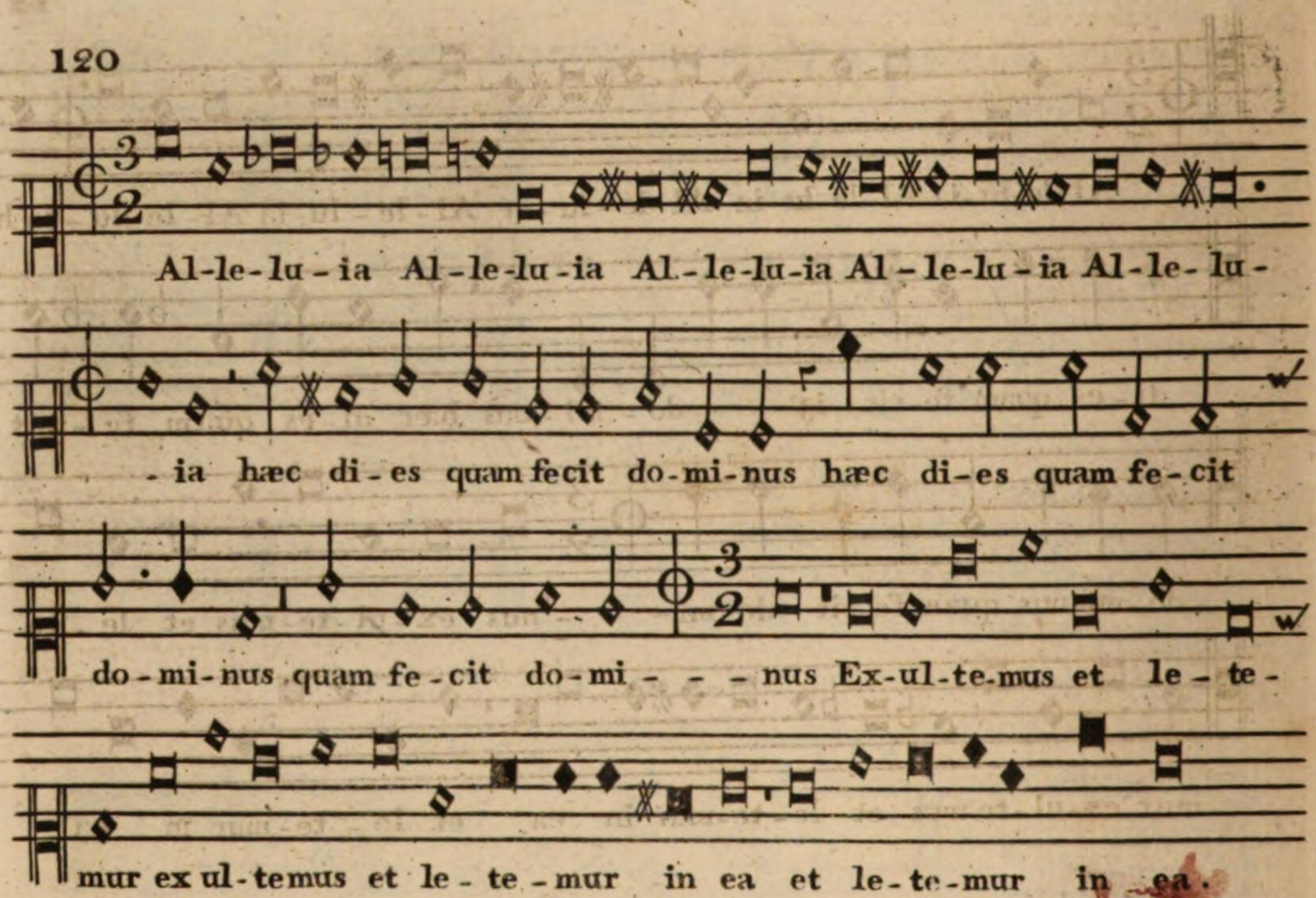
CHROMATIC FIFTHS



ENARMONIC FIFTHS



Having thus adjuſted the ſeveral intervals of a fourth and fifth in each of the three genera, the author proceeds to exhibit certain compoſitions of his own in each of them; and firſt we have a motet compoſed by himſelf, and ſung, as he ſays, in his church on the day of the Reſurrection, as a ſpecimen of the true chromatic.


Al-le-lu-ia Al-le-lu-ia Al-le-lu-ia Al-le-lu-ia Al-le-lu-
-ia hæc di-es quam fecit do-mi-nus hæc di-es quam fe-cit
do-mi-nus quam fe-cit do-mi- - - nus Ex-ul-te-mus et le-te-
mur ex ul-temus et le-te-mur in ea et le-te-mur in ea.
Al-le-lu-ia Al-le-lu-ia Al-le-lu-ia Al-le-lu-ia Al-le-lu- -ia hæc
di-es quam fe-cit do-mi-nus hæc di-es hæc di-es quam fe-cit
do-mi-nus quam fe-cit do-mi- -nus ex-ul-te-mus et le-te-mur
ex-ul-te-mus et le-te-mur in e-a et le-te-mur in e-a

Al-le-lu-ia Al-le-lu-ia Al-le-lu-ia Al-le-lu-ia Al-le-lu-ia hæc

di-es quam fe-cit ij do-mi-nus hæc di-es quam fe-cit

do-mi-nus quam fe-cit do-mi- - -nus ex-ul-te-mus et le-te-

-mur ex-ul-te-mus et le-te-mur in ea et le-te-mur in ea

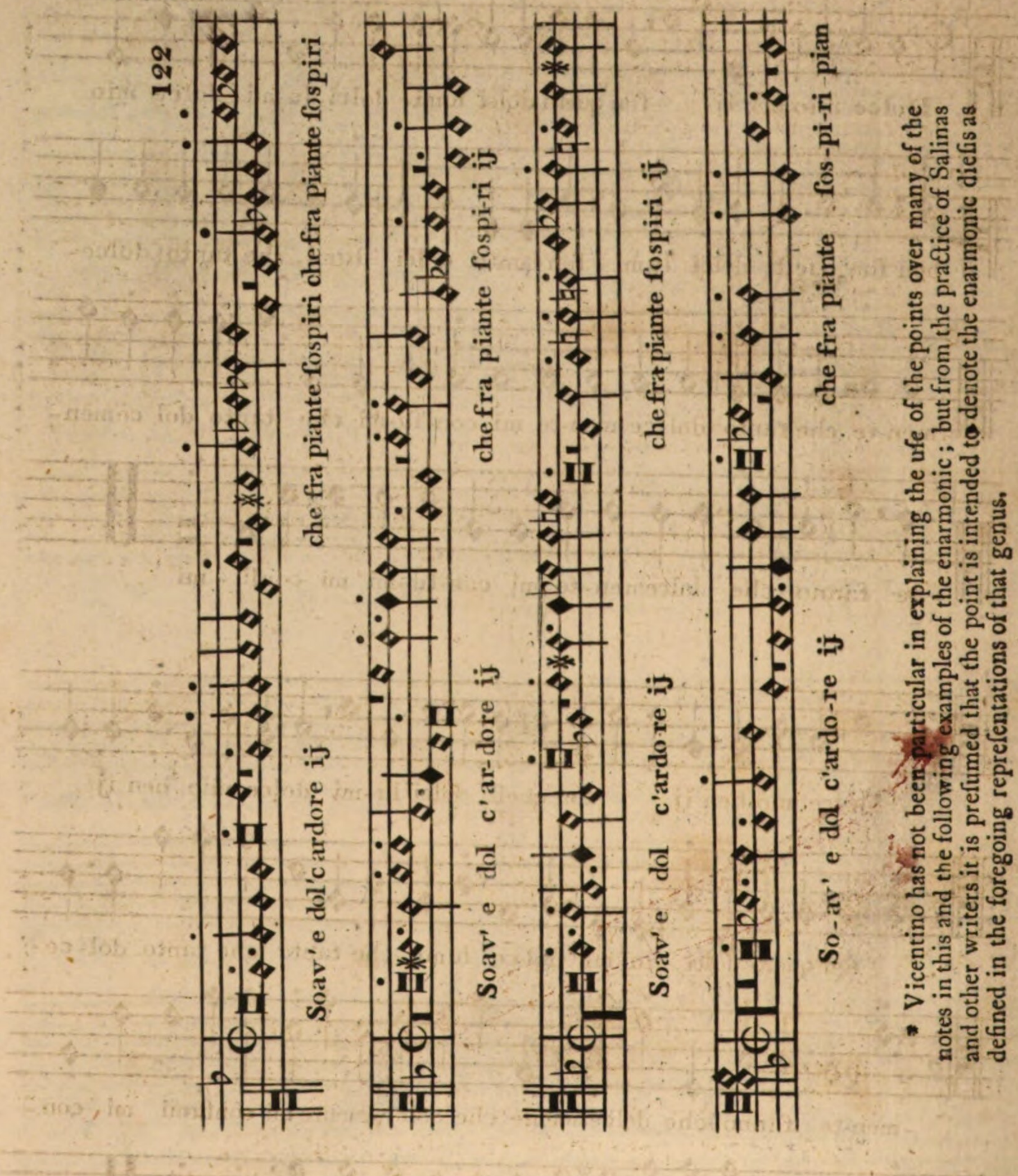
Al-le-lu-ia Al-le-lu-ia Al-le-lu-ia Al-le-lu-ia Al-le-lu-ia hæc

di-es quam fe-cit do-mi-nus hæc di-es quam fe-cit do-mi-

-nus ex-ul-te-mus et le-te-mur ex-ul-te-mus et le-te-

-mur in ea et le-te-mur in ea Alleluia

As an example of the enarmonic, he gives the following, which is the beginning of a madrigal in four parts.



* Vicentino has not been particular in explaining the uſe of the points over many of the notes in this and the following examples of the enarmonic; but from the practice of Salinas and other writers it is preſumed that the point is intended to denote the enarmonic dieſis as defined in the foregoing repreſentations of that genus.

And as a proof of the practicability of uniting all the genera in one compoſition, he exhibits the following madrigal for four voices, which he ſays may be ſung in five ways, that is to ſay, as diatonic, as chromatic, as chromatic and enarmonic, as diatonic and chromatic, and laſtly as diatonic, chromatic and enarmonic.

Dolce mio ben ij son queſti dolci lumi dolci lu-mi dolce mio

ben ſon queſti dolci lumi ſon queſti dolci lumi che tanto dolce-

-men-te che tanto dol-ce-men-te mi con-fu-mi che tanto dol cemen-

-te fanno che dolcemen-te mi con-fu-mi mi confu-mi

Dolce mio ben ij ſon queſti dolci lu-mi dolce mio ben ij

ſon queſti dolci lu-mi dol-ce lumi che tanto che tanto dol-ce-

-men-te fanno che dolce-mente che dolce-mente mi conſumi mi con-

-fu-mi fanno che dolcemen te mi con-fu-mi mi con-fu-mi

Dolce mio ben ſon queſti dolci lu-mi dolce mio ben ſon queſ-

-ti dol-ci lu-mi ſon queſti dolci lumi dolci lu-mi che tanto

dolce-mente che tan-to dolcemente mi con-ſu-mi che tan-to

dol-ce-mente mi con-ſu-mi dol-ce-mente mi con-ſu-mi

Dolce mio ben ij ſon queſti dolci lu-mi dol-ci

mio ben ij ſon queſti dolci lu-mi che tanto dolce- men-te

fanno che mi con-ſu-mi che dolce-mente

mi con-ſu-mi mi con-ſu-mi Hay-me

Kircher ſeems to think that Vicentino has ſucceeded in this his attempt to reſtore the ancient genera; and if he has, either the diſcovery was of no worth, or the moderns have a great deal to anſwer for in their not adopting it. The following are the ſentiments of Kircher touching Vicentino and his endeavours to reduce the ancient muſic to modern practice. 'The firſt that I know of who invented the me-'thod of compoſing muſic in the three genera, according to the 'manner of the ancients, was Nicolaus Vicentinus *; who when he 'perceived that the diviſion of the tetrachords according to the three 'genera by Boetius could not ſuit a polyphonous melotheſia and our 'ratio of compoſition, deviſed another method, which he treats of 'at large in an entire book. There were however not wanting ſome, 'who being ſtrenuous admirers and defenders of ancient muſic, ca-'villed at him wrongfully and undeſervedly for having changed the 'genera that had been wiſely inſtituted by the ancients, and put in 'their ſtead I know not what ſpurious genera; but thoſe who ſhall 'examine more cloſely into the affair will be obliged to confeſs that 'Vicentinus had very good reaſon for what he did, and that no other 'chromatic enarmonic polyphonous melotheſia could be made than 'as he taught †.'

This declaration of Kircher is not eaſily to be reconciled with thoſe poſitive aſſertions of his in the Muſurgia, that the ancients were ſtrangers to polyphonous muſic; and the examples above given are all of that kind.

But waving this conſideration, whoever will be at the pains of examining theſe ſeveral compoſitions, will find it a matter of great difficulty to reconcile them with the accounts that are given of the manner of dividing the tetrachord in the ſeveral genera; he will not be able eaſily to diſcover the chromatic interval of three incompoſite ſemitones; much leſs will he be able to make out the enarmonic dieſis; and much greater will be his difficulty to perſuade himſelf, or any one

* Kircher is miſtaken in his aſſertion that Vicentino was the firſt who attempted the revival of the ancient genera; for it ſeems that Giovanni Spataro of Bologna, in the year 1512, made an attempt of that kind, but without ſucceſs. Storia della Muſica di Giambatiſta Martini, tom. I. pag. 126, in not.

But notwithſtanding the diſcouragements the two writers abovementioned met with, Domenico Mazzochi of Rome, about the year 1600, attempted a compoſition in all the three genera, entitled Planctus Matris Euryalis, which is printed in the Muſurgia, tom. I. pag. 660.

† Muſurg. tom. I. pag. 637.

elſe,

elſe, that either of the above compoſitions can ſtand the teſt of an ear capable of diſtinguiſhing between harmony and diſcord.

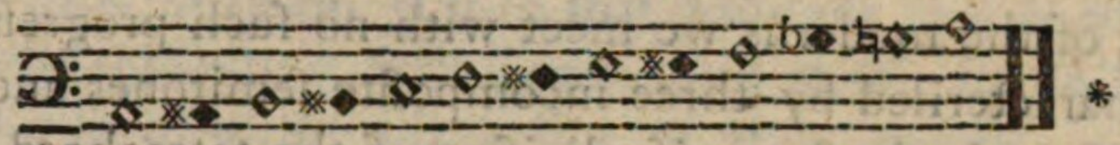
But all wonder at this attempt of Vicentino muſt ceaſe, when it is known that he contended with ſome of the greateſt muſicians, his contemporaries, that the modern or Guidonian ſyſtem was not ſimply of the diatonic kind, but compounded of all the three genera. He has himſelf, in the forty-third chapter of his fourth book, given a moſt curious relation of a diſpute between him and a reverend father on this ſubject, which produced a wager, the deciſion whereof was referred to two very ſkilful profeſſors, who gave judgment againſt him. An account of this diſpute is contained in a ſubſequent chapter of the preſent work.

CHAP. IX.

IT does not any where appear that the muſic which gave riſe to the controverſy between Vicentino and his opponents, was any other than what is in uſe at this day; which that it is the true diatonic of the ancients is more than probable; though, whether it be the diatonicum Pythagoricum, or the diatonicum intenſum of Ariſtoxenus, of Didymus, or of Ptolemy, has been thought a matter of ſome difficulty to aſcertain, but is of little conſequence in practice.

But we are not to underſtand by this that the muſic now in uſe is ſo purely and ſimply diatonic, as in no degree to participate of either the enarmonic or chromatic genus, for there is in the modern ſcale ſuch a commixture of tones and ſemitones as may ſerve to warrant a ſuppoſition that it partakes in ſome meaſure of the ancient chromatic; and that it does ſo, ſeveral eminent writers have aſſerted, and ſeems to be the general opinion. Monſieur Broſſard ſays, that after the diviſion of the tone between the Meſe and Parameſe of the ancients, which anſwer to our A and □, into two ſemitones, it was thought that the other tones might be divided in like manner; and that therefore the moderns have introduced the chromatic chords of the ancient ſcale, and thereby divided the tones major in each tetrachord into two ſemitones: this, he adds, was effected by raiſing the loweſt chord a ſemitone by

means of this character ✻, which was placed immediately before the note ſo to be raiſed, or on its place immediately after the cliff. Again he ſays, that it having been found that the tones minor terminating the tetrachords upwards were no leſs capable of ſuch diviſion than the tones major, they added the chromatic chords to the ſyſtem, and in like manner divided the tones minor, ſo that the octave then became compoſed of thirteen ſounds and twelve intervals, eight of which ſounds are diatonic or natural, diſtinguiſhed in the following ſcheme by white notes thus ◇, and five chromatic by black ones thus ◆, with the ſharp ſign, which Broſſard calls a double dieſis prefixed to each of the notes ſo elevated.



*

This, though a plauſible, is a miſtaken account of the matter; for firſt it is to be obſerved, this introduction of the ſemitones into the ſyſtem, was not for the purpoſe of a progreſſion of ſounds different from that in the diatonic genus: on the contrary, nothing more was intended by it than to render it ſubſervient to the diatonic progreſſion; or, in other words, to inſtitute a progreſſion in the diatonic ſeries from any given chord in the diapaſon, and we ſee the deſign of this improvement in its effects.

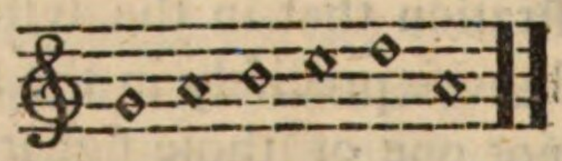
For, to aſſume the language of the moderns, if we take the key of E, in which no fewer than four of the ſharp ſignatures are neceſſary, it is evident to demonſtration that in the ſyſtem of the diapaſon the tones and ſemitones will ariſe preciſely in the ſame order as they do in the key of C, where not one of thoſe ſignatures are neceſſary, and the ſame, mutatis mutandis, may be ſaid of all the other keys with the greater third; and the like will be found in thoſe with the leſſer third, comparing them with that of A, the prototype of them all †.

From hence it follows, that the uſe of the above ſignatures has no effect either in the intenſion or remiſſion of the intervals; but the ſame remain, notwithſtanding the application of them the ſame as in the diatonic genus.

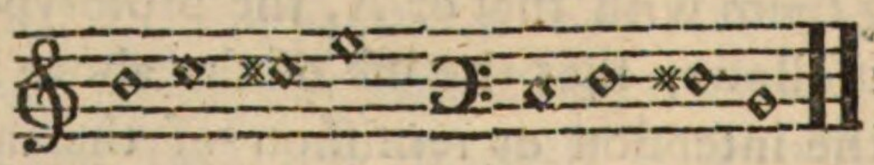
* Dictionaire de Muſique, Article SYSTEMA.
† See this demonſtrated in the next book.

It is true, that ſince the invention of polyphonous or ſymphoniacal muſic, a ſpecies of harmony of which the ancients ſeem to have been totally ignorant; among the various combinations that may occaſionally occur in a variety of parts, ſome may ariſe that ſhall nearly anſwer to the chromatic intervals, and it ſhall ſometimes happen that a given note ſhall have for its accompanyment thoſe ſounds that conſtitute a chromatic tetrachord; and of this opinion are ſome of the moſt ſkilful modern organiſts, who are inclined to think that they ſometimes uſe the chromatic intervals, without knowing that they do ſo*. But the queſtion in debate can only be determined by a compariſon of the melody of the moderns with that of the ancients; and in that of the moderns we meet with no ſuch progreſſion as that which is characteriſed by three incompoſite ſemitones and two ſemitones, which is the leaſt preciſe diviſion of the tetrachord that any of the antients have given us.

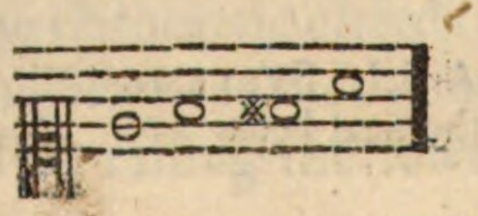
Our countryman Morley gives his opinion of the matter in the following words: 'The muſic which we now uſe is neither juſt 'diatonic, nor right chromatic. Diatonicum is that which is now 'in uſe, and riſeth throughout the ſcale by a whole note, a whole 'note, and a leſſer or half note. A whole note is that which the 'Latins call Integer Tonus, and is that diſtance which is betwixt 'any two notes, except *mi* and *fa*; for betwixt *mi* and *fa* is not a 'full halfe note, but is leſſe than halfe a note by a comma, and 'therefore called the leſſer halfe note, in this manner.



'Chromaticum is that which riſeth by ſemitonium minus, or the 'leſs halfe note, the greater halfe note, and three halfe notes thus.

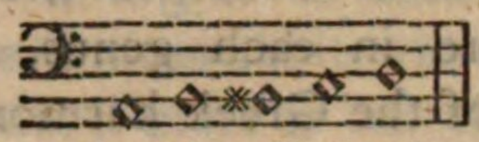


* It is alſo ſaid, that in paſſages of notes in ſucceſſion the chromatic intervals ſometimes occur. The following not uncommon paſſage is ſaid to be an example of the hemiolian or ſeſquialteral chromatic.

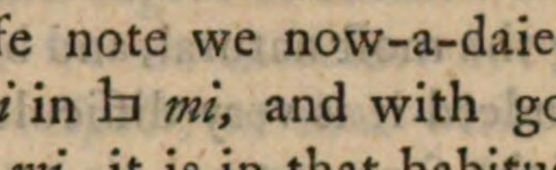


The

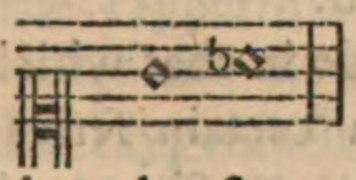
'The greater halfe note betwixt *fa* and *mi* in b *fa* ♮ *mi*. Enar-
'monicum is that which riſeth by dieſis, dieſis (dieſis is the halfe of
'the leſſe halfe note) and ditonus; but in our muſicke I can give no
'example of it, becauſe we have no halfe of a leſſe ſemitonium;
'but thoſe who would ſhew it ſet down this example



'of enarmonicum, and marke the dieſis thus × as it were the halfe of
'the apotome or greater halfe note, which is marked thus ♯. This
'ſign of the more halfe note we now-a-daies confound with our b
'ſquare, or ſigne of *mi* in ♮ *mi*, and with good reaſon; for when
'*mi* is ſung in b *fa* ♮ *mi*, it is in that habitude to *a la mi re*, as the
'double dieſis maketh F *fa ut* ſharpe to E *la mi*, for in both places
'the diſtance is a whole note; but of this enough: and by this
'which is already ſet downe, it may evidentlie appeare that this kind
'of muſick which is uſual now-a-daies, is not fully and in every reſ-
'pect the ancient diatonicum; for if you begin any four notes, ſing-
'ing *ut*, *re*, *mi*, *fa*, you ſhall not find either a flat in E *la mi*, or a
'ſharp in F *fa ut*; ſo that it muſt needes follow that it is neither juſt
'diatonicum nor right chromaticum. Likewiſe by that which is
'ſaid it appeareth this point, which our organiſts uſe



'is not right chromatica, but a baſtard point, patched up of halfe
'chromaticke and halfe diatonick. Laſtlie, it appeareth by that
'which is ſaid, that thoſe virginals which our unlearned muſytians
'cal cromatica (and ſome alſo grammatica) be not right chroma-
'tica, but half enharmonica; and that al the chromatica may be ex-
'preſſed uppon our common virginals except this



'for if you would thinke that the ſharpe in g *ſol re ut* would ſerve
'that turne by experiment, you ſhall find that it is more than halfe a
'quarter of a note too low *.'

From hence we may conclude in general, that the ſyſtem as it ſtands at preſent, is not adapted to the chromatic genus; and were

* Plaine and eaſie Introduction to Practicall Muſicke. Annotations on Part I.

there a poſſibility, which no one can admit, of rendering the chromatic tolerable to a modern ear, the revival of it would require what has often been attempted in vain, a new and a better temperament of the ſyſtem than the preſent.

From the ſeveral hypotheſes above ſtated, and the different methods of dividing the tetrachord in each genus, it clearly appears that among the moſt ancient of the Greek harmonicians there was a great diverſity of opinions with reſpect to the conſtitution of the genera. And it alſo appears that both the chromatic and enarmonic gave way to the diatonic, as being the moſt natural, and beſt adapted to the general ſenſe of harmony; indeed it is very difficult to account for the invention and practice of the former two, or to perſuade ourſelves that they could ever be rendered grateful to a judicious ear. And after all that has been ſaid of the enarmonic and chromatic, it is highly probable that they were ſubſervient to oratory, or in ſhort that they were modes of ſpeaking and not of ſinging, the intervals in which they conſiſt not being in any of the ratios which are recognized by the ear as conſonant.

Another ſubject in harmonics, no leſs involved in obſcurity, is the doctrine of the Modes, Moods, or Tones, for ſo they are indiſcriminately termed by ſuch as have profeſſed to treat of them. The appellation of Moods has indeed been given to the various kinds of metrical combination, uſed as well in muſic as poetry, and were the word Tone leſs equivocal than Mode, it might with propriety be ſubſtituted in the place of the former. Euclid has given no fewer than four ſenſes in which the word Tone is accepted *; whereas that of Mode or Mood is capable of but two; and when it is ſaid that theſe appellations refer to ſubjects ſo very different from each other as ſound and duration, that is to ſay tone and time, there can be little doubt which of the two is to be preferred.

To conſider the term Mode in that which is conceived to be its moſt eligible ſenſe, it ſignifies a certain ſeries or progreſſion of ſounds. Seven in number at leaſt are neceſſary to determine the nature of the progreſſion; and the diſtinction of one mode from another ariſes from that chord in the ſyſtem from whence it is made to commence; in this reſpect the term Mode is ſtrictly ſynonymous with the word Key, which at this day is ſo well underſtood as to need no explanation.

As

* Introd. Harmon. ex verſ. Meibom. pag. 19. et vide Meib. in loc. citat.

As to the number of the modes, there has ſubſiſted a great variety of opinions, ſome reckoning thirteen, others fifteen, others twelve, and others but ſeven; and, to ſpeak with preciſion, it is as illimitable as the number of ſounds. The ſounds that compoſe any given ſeries, with reſpect to the degree of acumen or gravity aſſigned to each, are capable of an innumerable variety; for as a point or a line may be removed to places more or leſs diſtant from each other ad infinitum; in like manner a ſeries of ſounds may be infinitely varied, as well with reſpect to the degree of acumen or gravity, as the poſition of each in the ſyſtem *; we are therefore not to wonder at the diverſity of opinions in this reſpect, or that while ſome limit the modes to ſeven, others contend for more than double that number.

At what time the modes were firſt invented does no where clearly appear. Bontempi profeſſes himſelf at a loſs to fix it †; but Ariſtides Quintilianus intimates that they were known ſo early as the time of Pythagoras ‡; and conſidering the improvements he made, and that it was he who perfected the great or immutable ſyſtem, it might naturally be ſuppoſed that he was the inventor of them; but the contrary of this is to be inferred from a paſſage in Ptolemy, who ſays that the ancients ſuppoſed only three modes, the Dorian, the Phrygian, and the Lydian ||, denominations that do but ill agree with the ſuppoſition that any of them were invented by Pythagoras, who it is well known was a Samian. But farther, Ariſtides Quintilianus, in the paſſage above referred to, has given the characteriſtical letters of all the fifteen modes according to Pythagoras; ſo that, admitting him to have been the inventor of the additional twelve, the inſtitution of the three primitive modes is referred backwards to a period anterior to that in which the ſyſtem is ſaid to have been perfected.

Euclid relates that Ariſtoxenus fixed the number of the modes at thirteen, that is ſay, 1. the Hypermixolydian or Hyperphrygian. 2. The acuter Mixolydian, called alſo the Hyperiaſtian. 3. The graver Mixolydian, called alſo the Hyperdorian. 4. The acuter Lydian. 5. The graver Lydian, called alſo the Æolian. 6. The acuter Phrygian. 7. The graver Phrygian, called alſo the Iaſtian. 8. The Dorian. 9. The acuter Hypolydian. 10. The graver Hypolydian, called alſo the Hypoœolian. 11. The acuter Hypophrygian. 12. The graver Hy-

* Wallis. Append. de Vet. Harm. pag. 312. † Hiſtor. Muſ. pag. 136.
‡ Lib. I. pag. 28, ex verſ. Meibom. || Harmonicor. lib. II. cap. vi. x. ex verſ. Wallis.

pophrygian, called alſo the Hypoiaſtian. 13. The Hypodorian*. The moſt grave of theſe was the Hypodorian; the reſt followed in a ſucceſſion towards the acute, exceeding each other reſpectively by a hemitone; and between the two extreme modes was the interval of a diapaſon†.

The better opinion however ſeems to be, that there are in nature but ſeven, and as touching the diverſity between them, it is thus accounted for. The Proſlambanomenos of the hypodorian, the graveſt of all the modes, was, in the judgment of the ancients, the moſt grave found that the human voice could utter, or that the hearing could diſtinctly form a judgment of; they made the Proſlambanomenos of the hypoiaſtian or graver hypophrygian to be acuter by a hemitone than that of the hypodorian; and conſequently the Hypate of the one more acute by a hemitone than the Hypate of the other, and ſo on for the reſt; ſo that the Proſlambanomenos of the hypoiaſtian was in the middle, or a mean between the Proſlambanomenos of the hypodorian and its Hypate hypaton. The Proſlambanomenos of the acuter hypophrygian was ſtill more acute by a hemitone, and conſequently more acute by a whole tone than the hypodorian, and therefore it coincided with the Hypate hypaton of that mode, as is thus repreſented by Ptolemy, lib. II. cap. xi ‡.

ACUTE

Hypermixolydian

Tone

Mixolydian

Limma

Lydian

Tone

Phrygian

Tone

Dorian

Limma

Hypolydian

Tone

Hypophrygian

Tone

Hypodorian

GRAVE

* Euclid. Introd. Harm. pag. xx. † Wallis Append. de Vet. Harm. pag. 312.
‡ Ibid. pag. 313.

Thoſe

Thoſe who contended for fifteen modes, among whom Alypius is to be reckoned, to the thirteen above enumerated, added two others in the acute, which they termed the Hyperlydian and Hyperæolian*.

But againſt this practice of increaſing the modes by hemitones, Ptolemy argues moſt ſtrongly in the eleventh chapter, and alſo in the four preceeding chapters of the ſecond book of his Harmonics: and indeed were it to prevail, the modes might be multiplied without end, and to no purpoſe. Notwithſtanding this, Martianus Capella contends for fifteen and Glareanus for twelve modes; but it is to be obſerved, that both theſe latter writers are, in reſpect of the Greek harmonicians, conſidered as mere moderns; and beſides theſe there are certain other objections to their teſtimony, which will be mentioned in their proper place.

As to the two additional modes mentioned by Alypius, they ſeem to have been added to the former thirteen, more with a view to regularity in the names and poſitions of the modes, than to any particular uſe; and perhaps there is no aſſignable period of time during which it may with truth be ſaid, that more than thirteen were admitted into practice.

Ptolemy however rejects as ſpurious ſix of the thirteen allowed by the Ariſtoxeneans, and this in conſequence of the poſition he had advanced, that it was not lawful to encreaſe the modes by a hemitone. It is by no means neceſſary to give his reaſons at large for limiting the number to ſeven, as his doctrine contains in it a demonſtration that the encreaſe of them beyond that number was rather a corruption than an improvement of the harmonic ſcience. As to the three primitive modes, the Dorian, the Phrygian, and the Lydian, each of them was ſituated at the diſtance of a ſeſquioctave tone from that next to it †, and therefore the two extremes were diſtant from each other two ſuch tones; or, in other words, the Phrygian mode was more acute than the Dorian by one tone, and the Lydian more acute than the Phrygian by one tone; conſequently the Lydian was more acute than the Dorian by two tones.

To theſe three modes Ptolemy added four others, making together ſeven, which, as he demonſtrates, are all that nature can admit of. As to the Hypermixolydian, mentioned by him in the tenth chapter of his ſecond book, it is evidently a repetition of the hypodorian.

* Wallis. Append. pag. 312. † Ibid.

MIXO-

MIXOLYDIAN
LYDIAN
PHRYGIAN
DORIAN
HYPOLYDIAN
HYPOPHRYGIAN
HYPODORIAN*

The above is the order in which they are given by Euclid, Gaudentius, Bacchius, and Ptolemy himſelf, though the latter, in the eleventh chapter of his ſecond book, has varied it by placing the Dorian firſt, and in conſequence thereof tranſpoſing all the reſt; but this was for a reaſon which a cloſer view of the ſubject will make it unneceſſary to explain.

Having proceeded thus far in the endeavour to diſtinguiſh between the legitimate and the ſpurious modes, it may now be proper to enter upon a more particular inveſtigation of their natures, and ſee if it be not poſſible, notwithſtanding that great diverſity of opinion that has prevailed in the world, to draw from thoſe valuable ſources of intelligence the ancient harmonic writers, ſuch a doctrine as may afford ſome degree of ſatisfaction to a modern enquirer. It muſt be confeſſed that this has been attempted by ſeveral writers of diſtinguiſhed abilities, and that the ſucceſs of their labours has not anſwered the expectations of the world. The Italians, particularly Franchinus, or as he is alſo called, Gaffurius, Zaccone, Zarlino, Galilei, and others, have been at infinite pains to explain the modes of the ancients, but to little purpoſe. Kircher has alſo undertaken to exhibit them; but notwithſtanding his great erudition and a ſeeming certainty in all he advances, his teſtimony is greatly to be ſuſpected; and, if we may believe Meibomius, whenever he profeſſes to explain the doctrines of the ancients, he is ſcarcely intitled to any degree of credit. The reaſon why theſe have failed in their attempts is obvious, for it was not till after moſt of them wrote, that any accurate edition of the Greek harmonicians was given to the world: ſo lately as the time when Morley publiſhed his Introduction, that is to ſay in the reign of queen Elizabeth, it was doubted whether the writings of ſome of the moſt valuable of them were extant even in manuſcript; and it ſeemed to be the opinion that they had periſhed in that general wreck of literature

* Called alſo the Locrenſian. Euclid Introd. Harm. pag. 16.

terature which has left us juſt enough to gueſs at the greatneſs of our loſs.

To the ſeveral writers above-mentioned we may add Glareanus of Baſil, a contemporary and intimate friend of Eraſmus; but he confeſſes that he had never ſeen the Harmonics of Ptolemy, nor indeed the writings of any of the Greek Harmonicians, and that for what he knew of them he was indebted to Boetius and Franchinus. From the peruſal of theſe authors he entertained an opinion that the number of the modes was neither more nor leſs than twelve; and, confounding the ancient with the modern, or, as they are denominated, the eccleſiaſtical modes, which, as originally inſtituted by St. Ambroſe, were only four in number, but were afterwards by St. Gregory, about the year 600, encreaſed to eight, he adopted the diſtinction of authentic and plagal modes, and left the ſubject more perplexed than he found it.

To ſay the truth, very few of the modern writers in the account they give of the modes are to be depended on; and among the ancients, ſo great is the diverſity of opinions, as well with reſpect to the nature as the number of them, that it requires a great deal of attention to underſtand the deſignation of each, and to diſcriminate between the genuine and thoſe that are ſpurious. In general it is to be obſerved that the modes anſwer to the ſpecies of diapaſon, which in nature are ſeven and no more, each terminating or having its final chord in a regular ſucceſſion above that of the mode next preceding: for inſtance, the Dorian, which had its ſituation in the middle of the lyre or ſyſtem, had for its final note hypate meſon or E; the Hypolydian, the next in ſituation towards the grave, had for its final chord parypate meſon or F; and the Hypophrygian, the next in ſituation towards the grave to the Hypolydian, had for its final chord lychanos hypaton or G; ſo that the differences between the modes in ſucceſſion, with reſpect to their degrees of gravity, correſponded with the order of the tones and ſemitones in the diatonic ſeries. But it ſeems that thoſe of the ancient harmonicians, who contended for a greater number of modes than ſeven, effected an encreaſe of them by making the final chord of each in ſucceſſion, a ſemitone more acute than that of the next preceding mode: and againſt this practice of augmenting the modes by ſemitones Ptolemy has expreſsly written in the eleventh chapter of the ſecond book of his Harmonics, and that with ſuch

force

force of reaſon and argument, as cannot fail to convince every one that reads and underſtands him, to which end nothing can ſo much conduce as the attentive peruſal of that learned Appendix to his Harmonics of Dr. Wallis, ſo often cited in the courſe of this work.

Beſides this Appendix, the world is happy in the poſſeſſion of a diſcourſe entitled, An Explanation of the Modes or Tones in the ancient Græcian Muſic, by Sir Francis Haſkins Eyles Stiles, Bart. F. R. S. and publiſhed in the Philoſophical Tranſactions for the year 1760; and by the aſſiſtance of theſe two valuable tracts it is hoped that this abſtruſe part of muſical ſcience may be rendered to a great degree intelligible.

CHAP. X.

TO conceive aright of the nature of the modes, it muſt be underſtood, that as there are in nature three different kinds of diateſſaron, and alſo four different kinds of diapente; and as the diapaſon is compoſed of theſe two ſyſtems, it follows that there are in nature ſeven ſpecies of diapaſon *. The difference among theſe ſeveral ſyſtems ariſes altogether from the different poſition of the ſemitone in each ſpecies. To explain this difference in the language of the ancient writers would be very difficult, as the terms uſed by them are not ſo well calculated to expreſs the place of the ſemitone as thoſe ſyllables invented by the moderns for that ſole purpoſe, the practice whereof is termed ſolmiſation. We muſt therefore ſo far tranſgreſs againſt chronological order, as, in conformity to the practice of Dr. Wallis, to aſſume theſe ſyllables for the purpoſe of diſtinguiſhing the ſeveral ſpecies of diateſſaron, diapente, and diapaſon, reſerving a particular account of their invention and uſe to its proper place.

To begin with the diateſſaron; it contains four chords and three intervals: its ſpecies are alſo three: the firſt is ſaid to be that which has LA, the characteriſtical ratio or ſound of the diateſſaron, as MI is of the diapente and diapaſon, in the firſt or more acute place; the

* Vide Ptolem. Harm. lib. II. cap. ix. ex verſ. Wallis. Wallis. Append. de Vet. Harm. pag. 310. Euclid. Introd. Harm. pag. 15. ex verſ. Meibom. Kirch. Muſurg. tom. I. cap. xv. xvi.

ſecond which hath it in the ſecond, and the third which hath it in the third *.

Euclid defines theſe ſeveral ſpecies by the appellatives that denote their ſituation on the lyre, viz. Βαρυπυκνοι Barypyknoi, Μεσοπυκνοι Meſopyknoi, and Οξυπυκνοι Oxypyknoi †, meaning by the firſt the ſeries from Hypaton hypaton to Hypate meſon, which we ſing in aſcending from the grave to the acute by the ſyllables FA, SOL, LA; by the ſecond, the ſeries from Parhypate hypaton to Parhypate meſon, SOL LA FA; and by the third, that from Lychanos hypaton to Lychanos meſon, FA, SOL, LA ‡. As to the other ſeries here under exhibited from Hypate meſon to Meſe, it is inſerted to ſhew that the diateſſaron is capable of but three mutations; for this latter will be found to be preciſely the ſame as, or in truth but a bare repetition of, the firſt ||, as is evident in the following ſcales, in which the extreme or grave ſound from which we aſcend, is diſtinguiſhed by a difference of character; the ſyllables being ever intended to expreſs the intervals or ratios, and not the chords themſelves.

SPECIES of the DIATESSARON III.

Meſe	a	la				la
	G	ſol			ſol	ſol
	F	fa		fa	fa	fa
Hypate meſon	E	la	la	la	la	LA
	D	ſol	ſol	ſol	SOL	1
	C	fa	fa	FA	3	
Hypate hypaton	B	MI	MI	2		
			1			

The above is the tetrachord hypaton of the great ſyſtem; but as a diapente contains five chords and four intervals, to explain the nature of the ſeveral ſpecies included in that ſyſtem a greater ſeries is required; it is therefore neceſſary for this purpoſe to make uſe of thoſe two tetrachords between which the diazeuctic tone may be properly interpoſed; and theſe can be no other than the tetrachord Meſon, and the tetrachord Diezeugmenon. It has been juſt ſaid that the characteriſtic ſyllable of the diapente is MI, and this will be found to occur in the firſt, ſecond, third, and fourth places of the following example

* Wall. Append. de Vet. Harm. pag. 310. † Introd. Harm. pag. 15, ex verſ. Meib.
‡ Wallis Append. de Vet. Harm. pag. 310. || Ibid.

of the poſſible variations in that ſyſtem, the conſequence whereof is, that the firſt ſpecies is to be ſung FA, SOL, LA, MI, the ſecond SOL, LA, MI, FA, the third LA, MI, FA, SOL, and the fourth MI, FA, SOL, LA, as in the following ſcales.

SPECIES of the DIAPENTE IV.

Nete diezeugmenon	e	la				la
	d	ſol			ſol	ſol
	c	fa		fa	fa	fa
Parameſe	b	mi	mi	mi	mi	mi
Meſe	a	la	la	la	la	LA
	G	ſol	ſol	ſol	SOL	4
	F	fa	fa	FA	3	
Hypate meſon	E	LA	LA	2		
			I			

Theſe are all the mutations of which the diapente is capable; that an additional ſeries, namely that from ♭ to f, was not inſerted as a proof of it, agreeable to what was done in reſpect to the next preceeding diagram, was becauſe between ♭ and f the diazeuctic tone marked by the ſyllable MI does no where occur: or, in other words, that ſeries is a ſemidiapente or falſe fifth, containing only three tones, which is leſs by a ſemitone, or, to ſpeak with preciſion, a limma, than a true diapente. As for example:

♭ Semitone c Tone d Tone e Semitone f

and were another ſeries to be added, it muſt begin from MI or ♭; now the diazeuctic tone is the interval between a and ♭, and conſequently is out of the pentachord *.

To diſtinguiſh the ſeven ſpecies of diapaſon, two conjunct diapaſons are required; for example, from Proſlambanomenos to Nete hyperboleon, to be ſung by the ſyllables LA, MI, FA, SOL, LA, MI, FA, SOL, LA, FA, SOL, LA †, in which ſeries will be found all the ſeven ſpecies of the diapaſon; and that there are no more will appear by a repetition of the experiment made in the caſe of the diateſſaron; for were we to proceed farther, and after the ſeventh begin from a or LA, the ſucceſſion of ſyllables would be in preciſely the ſame order as in the firſt ſeries, which is a demonſtration that thoſe two ſpecies are the ſame ‡.

* Wallis Append. de Vet. Harm. pag. 311. † Ibid. ‡ Ibid.

SPECIES

SPECIES of the DIAPASON VII.

Nete hyperboleon	aa	la								la
	g	ſol							ſol	ſol
	f	fa						fa	fa	fa
	e	la					la	la	la	la
	d	ſol				ſol	ſol	ſol	ſol	ſol
	c	fa			fa	fa	fa	fa	fa	fa
	b	mi		mi	mi	mi	mi	mi	mi	mi
Meſe	a	la	la	la	la	la	la	la	la	LA
	G	ſol	ſol	ſol	ſol	ſol	ſol	ſol	SOL	
	F	fa	fa	fa	fa	fa	fa	FA		
	E	la	la	la	la	la	LA			
	D	ſol	ſol	ſol	ſol	SOL				
	C	fa	fa	fa	FA					
	B	mi	mi	MI						
Proſlambanomenos	A	LA	LA *							

From hence it appears, that to exhibit all the various ſpecies of diapaſon, a leſs ſyſtem than the diſdiapaſon would have been inſufficient; for though the ſame ſounds, as to power, return after the ſingle diapaſon, yet all the ſpecies are not to be found therein. Ptolemy defines a ſyſtem to be a conſonance of conſonances; adding, that a ſyſtem is called perfect, as it contains all the conſonances with their and every of their ſpecies †; for that whole can only be ſaid to be perfect, which contains all the parts. According therefore to the firſt definition, the diapaſon is a ſyſtem, as is alſo the diapaſon and diateſſaron, the diapaſon and diapente, and the diſdiapaſon, for every of theſe is compoſed of two or more conſonances; but, according to the ſecond definition, the only perfect ſyſtem is the diſdiapaſon; for that, which no leſs ſyſtem can do, it contains ſix conſonances, namely, the diateſſaron 1, diapente 2, diapaſon 3, diapaſon and diateſſaron 4, diapaſon and diapente 5, and diſdiapaſon 6 ‡; and nature admits of no other.

The above ſcales declare the ſpecific difference between the ſeveral kinds of diateſſaron, diapente, and diapaſon, by ſhewing the place of the ſemitone in each.

Salinas ‖, by a diſcrimination of the greater and leſſer tone, has increaſed the number of combinations of the diateſſaron to ſix in this manner.

* Wallis Append. de Vet. Harm. pag. 311.
† Lib. II. cap. iv.
‡ Vide Euclid. Introd. Harm. ex verſ. Meib.
‖ Lib. IV. cap. iii.

of the poſſible variations in that ſyſtem, the conſequence whereof is, that the firſt ſpecies is to be ſung FA, SOL, LA, MI, the ſecond SOL, LA, MI, FA, the third LA, MI, FA, SOL, and the fourth MI, FA, SOL, LA, as in the following ſcales.

SPECIES of the DIAPENTE IV.

Nete diezeugmenon	e	la				la
	d	ſol			ſol	ſol
	c	fa		fa	fa	fa
Parameſe	b	mi	mi	mi	mi	mi
Meſe	a	la	la	la	la	LA
	G	ſol	ſol	ſol	SOL	4
	F	fa	fa	FA	3	
Hypate meſon	E	LA	LA	2		
			1			

Theſe are all the mutations of which the diapente is capable; that an additional ſeries, namely that from ♭ to f, was not inſerted as a proof of it, agreeable to what was done in reſpect to the next preceeding diagram, was becauſe between ♭ and f the diazeuctic tone marked by the ſyllable MI does no where occur: or, in other words, that ſeries is a ſemidiapente or falſe fifth, containing only three tones, which is leſs by a ſemitone, or, to ſpeak with preciſion, a limma, than a true diapente. As for example:

♭ Semitone c Tone d Tone e Semitone f

and were another ſeries to be added, it muſt begin from MI or ♭; now the diazeuctic tone is the interval between a and ♭, and conſequently is out of the pentachord *.

To diſtinguiſh the ſeven ſpecies of diapaſon, two conjunct diapaſons are required; for example, from Proſlambanomenos to Nete hyperboleon, to be ſung by the ſyllables LA, MI, FA, SOL, LA, MI, FA, SOL, LA, FA, SOL, LA †, in which ſeries will be found all the ſeven ſpecies of the diapaſon; and that there are no more will appear by a repetition of the experiment made in the caſe of the diateſſaron; for were we to proceed farther, and after the ſeventh begin from a or LA, the ſucceſſion of ſyllables would be in preciſely the ſame order as in the firſt ſeries, which is a demonſtration that thoſe two ſpecies are the ſame ‡.

* Wallis Append. de Vet. Harm. pag. 311. † Ibid. ‡ Ibid.

SPECIES

SPECIES of the DIAPASON VII.

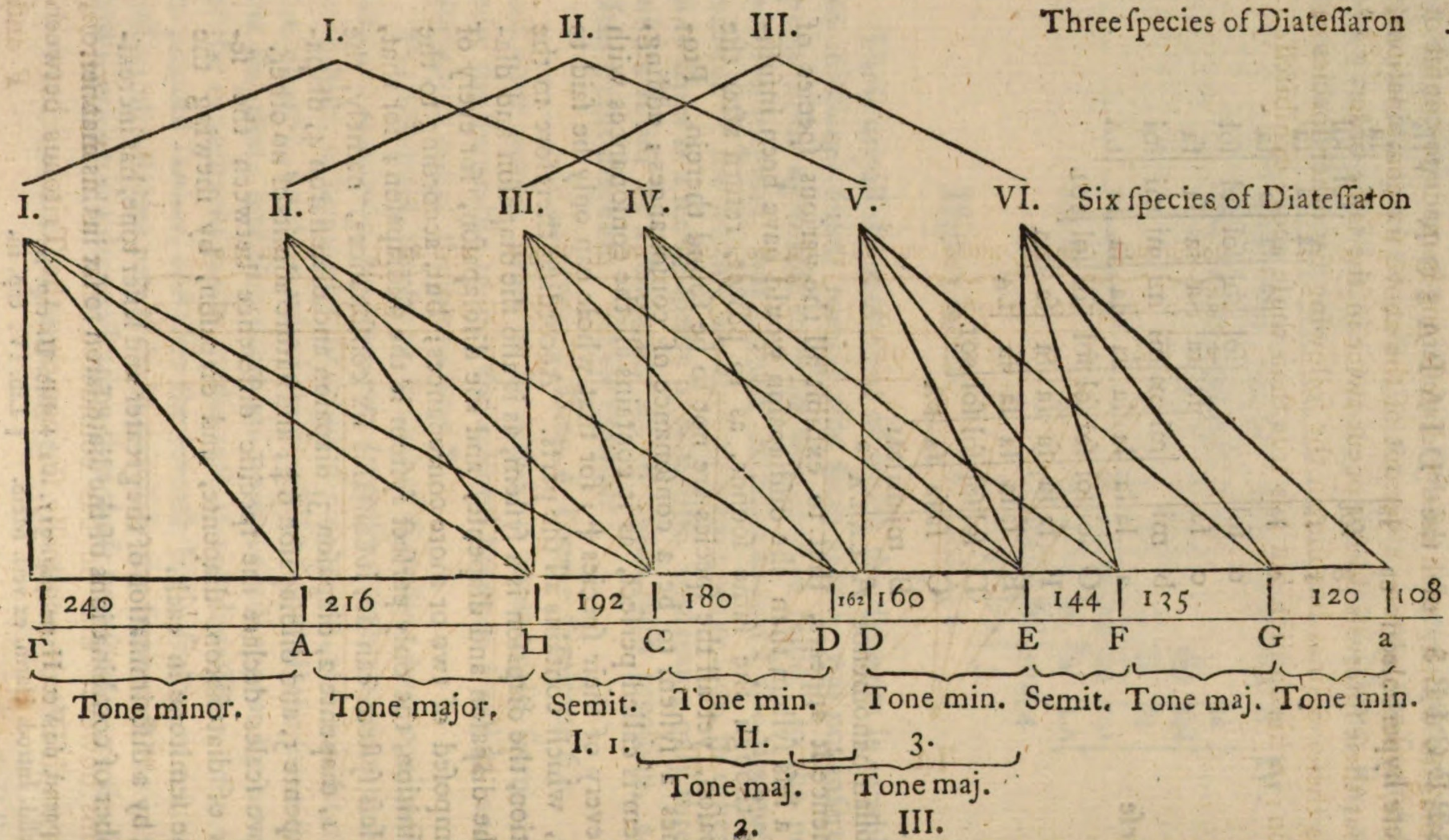
Nete hyperboleon	aa	la								la
	g	ſol							ſol	ſol
	f	fa						fa	fa	fa
	e	la					la	la	la	la
	d	ſol				ſol	ſol	ſol	ſol	ſol
	c	fa			fa	fa	fa	fa	fa	fa
	b	mi		mi	mi	mi	mi	mi	mi	mi
Meſe	a	la	la	la	la	la	la	la	la	LA
	G	ſol	ſol	ſol	ſol	ſol	ſol	ſol	SOL	
	F	fa	fa	fa	fa	fa	fa	FA		
	E	la	la	la	la	la	LA			
	D	ſol	ſol	ſol	ſol	SOL				
	C	fa	fa	fa	FA					
	B	mi	mi	MI						
Proſlambanomenos	A	LA	LA	*						

From hence it appears, that to exhibit all the various ſpecies of diapaſon, a leſs ſyſtem than the diſdiapaſon would have been inſufficient; for though the ſame ſounds, as to power, return after the ſingle diapaſon, yet all the ſpecies are not to be found therein. Ptolemy defines a ſyſtem to be a conſonance of conſonances; adding, that a ſyſtem is called perfect, as it contains all the conſonances with their and every of their ſpecies †; for that whole can only be ſaid to be perfect, which contains all the parts. According therefore to the firſt definition, the diapaſon is a ſyſtem, as is alſo the diapaſon and diateſſaron, the diapaſon and diapente, and the diſdiapaſon, for every of theſe is compoſed of two or more conſonances; but, according to the ſecond definition, the only perfect ſyſtem is the diſdiapaſon; for that, which no leſs ſyſtem can do, it contains ſix conſonances, namely, the diateſſaron 1, diapente 2, diapaſon 3, diapaſon and diateſſaron 4, diapaſon and diapente 5, and diſdiapaſon 6 ‡; and nature admits of no other.

The above ſcales declare the ſpecific difference between the ſeveral kinds of diateſſaron, diapente, and diapaſon, by ſhewing the place of the ſemitone in each.

Salinas ‖, by a diſcrimination of the greater and leſſer tone, has increaſed the number of combinations of the diateſſaron to ſix in this manner.

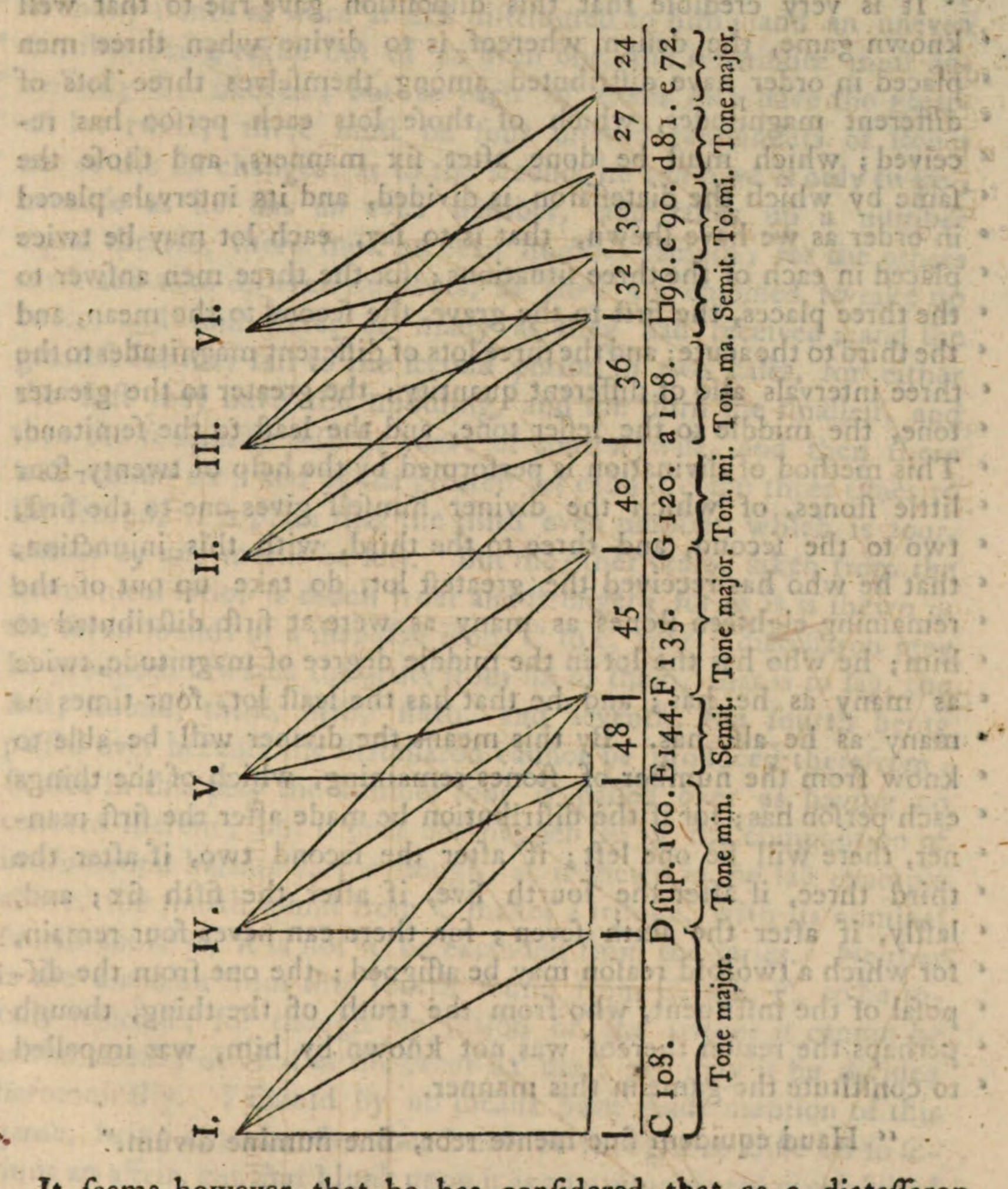
* Wallis Append. de Vet. Harm. pag. 311.
‡ Vide Euclid. Introd. Harm. ex verſ. Meib.
† Lib. II. cap. iv.
‖ Lib. IV. cap. iii.


I.
II.
III.
Three ſpecies of Diateſſaron
I.
II.
III.
IV.
V.
VI.
Six ſpecies of Diateſſaron
240
216
192
180
162
160
144
135
120
108
Γ
A
♮
C
D
D
E
F
G
a
Tone minor.
Tone major.
Semit.
Tone min.
Tone min.
Semit.
Tone maj.
Tone min.
I. 1.
II.
3.
Tone maj.
Tone maj.
2.
III.

Accord-

According to which, each of the diateſſarons is made to conſiſt of a hemitone, tone, and tone; yet out of the above ſix combinations, we ſee that theſe intervals do not occur twice in the ſame order.

Beſides theſe, Salinas has ſhewn the following ſix other ſpecies of diateſſaron; in his opinion not leſs true than thoſe above exhibited.



It ſeems however that he has conſidered that as a diateſſaron, which in truth is only nominally ſo, namely, the Tritonus between F and

F and ♄♱; the ſituation whereof, in reſpect to the others in the above diagram, ſeems to have ſuggeſted to him a motive for inſerting from Bede an account of a very curious method of divination, formerly practiſed, which is here, with ſome ſmall variation, tranſlated from Salinas.

'It is very credible that this diſpoſition gave riſe to that well 'known game, the deſign whereof is to divine when three men 'placed in order have diſtributed among themſelves three lots of 'different magnitudes, which of thoſe lots each perſon has re-'ceived; which muſt be done after ſix manners, and thoſe the 'ſame by which the diateſſaron is divided, and its intervals placed 'in order as we have ſhewn, that is to ſay, each lot may be twice 'placed in each of the three ſituations; for the three men anſwer to 'the three places, the firſt to the grave, the ſecond to the mean, and 'the third to the acute; and the three lots of different magnitudes to the 'three intervals alſo of different quantity; the greater to the greater 'tone, the middle to the leſſer tone, and the leaſt to the ſemitone. 'This method of divination is performed by the help of twenty-four 'little ſtones, of which the diviner himſelf gives one to the firſt, 'two to the ſecond, and three to the third, with this injunction, 'that he who has received the greateſt lot, do take up out of the 'remaining eighteen ſtones as many as were at firſt diſtributed to 'him; he who has the lot in the middle degree of magnitude, twice 'as many as he has; and he that has the leaſt lot, four times as 'many as he alſo has. By this means the diviner will be able to 'know from the number of ſtones remaining, which of the things 'each perſon has; for if the diſtribution be made after the firſt man-'ner, there will be one left; if after the ſecond two, if after the 'third three, if after the fourth five, if after the fifth ſix; and, 'laſtly, if after the ſixth ſeven; for there can never four remain, 'for which a twofold reaſon may be aſſigned; the one from the diſ-'poſal of the inſtituent, who from the truth of the thing, though 'perhaps the reaſon thereof was not known by him, was impelled 'to conſtitute the game in this manner.

"Haud equidem ſine mente reor, ſine numine divûm."

† Salinas De Muſica, lib. IV. cap. iii.

'The

'The other taken from the conſtant and ſettled order of the harmo-
'nical ratio; but four cannot poſſibly remain, becauſe the firſt and
'third perſons having received an uneven number of ſtones, either
'of them muſt, if he have the greateſt lot, take up an uneven num-
'ber alſo; as by the injunction of the inſtituent, he was to take up
'as many ſtones as were at firſt diſtributed to him; and an uneven
'number being taken out of an even one, the remainder muſt ne-
'ceſſarily be uneven; but as each of them may have the great-
'eſt lot twice, there muſt be four uneven remainders of ſtones
'out of the ſix changes: as to the ſecond, he can have it only twice;
'becauſe as he has an even number, and takes up a number
'equal thereto, there muſt an even number remain; for the others
'muſt alſo take up even numbers, as they are enjoined to take up
'twice, and four times as many as they had received; and the
'greateſt lot may fall to the ſecond perſon in two caſes, for either
'the firſt may have the middling, and the third the ſmalleſt, and
'then the remainder will be two; or contrarywiſe, and then there
'will remain ſix; and as the greateſt lot cannot come three times to
'the ſecond, it is plain that the third even number, which is four,
'cannot by any means be left. But the other reaſon taken from the
'harmonical ratio, is much truer and ſtronger; for as it is ſhewn in
'the ſeven ſounds of a diapaſon from C to c, that a diateſſaron may
'be produced towards the acute from ſix of them, that is to ſay, the
'firſt, ſecond, third, fifth, ſixth, and ſeventh, the fourth being
'paſſed over becauſe the diateſſaron cannot be produced therefrom;
'ſo alſo in this play the number four is paſſed over as having no
'concern therein; but it does not happen ſo in the compoſition of
'inſtrumental harmony, for though, as is ſhewn in the laſt example
'above, the fourth ſound from C makes a tritone, with its nominal
'fourth above it, it is not to be excluded from the ſeries. Neither
'is the diapaſon from this fourth ſound from C, viz. F, to be to-
'tally rejected; for though by reaſon of the tritone it cannot be
'arithmetically divided as the other ſix may, yet may it be divided
'harmonically. I ſhould by no means have made mention of this
'game, being apprehenſive that I may be thought to trifle on ſo ſe-
'rious an affair, but that I look upon it as an example very much ſuited
'to explain the ſubject we are treating of; and I did it the more
'willingly, becauſe I found it particularly treated of by Bede, ſur-

'named the Venerable, a moſt grave man, and deeply learned both 'in theology and ſecular arts, from whence we may conjecture that 'it has been invented above one thouſand years *."

But, to return from this digreſſion, notwithſtanding the ſpecies of diapaſon are manifeſtly ſeven, the modes ſeem originally to

* The paſſage on which this aſſertion is grounded, has eluded a curſory ſearch among the writings of Bede; nevertheleſs it may poſſibly be found in ſome one or other of thoſe numerous little tracts on arithmetic, muſic, and other of the ſciences, contained in his voluminous works, many whereof as yet exiſt only in manuſcript. The deſcription given by Salinas of this method of divination is in nearly theſe words.

Ab hac etiam diſpoſitione credendum eſt, ortum habuiſſe luſum illum notiſſimum, cujus propoſitum eſt, tribus hominibus ordine diſpoſitis, tres res diverſæ magnitudinis inter ſe diſtribuentibus, quam quis eorum acceperit, divinare. Quod ſex modis fieri, neceſſe eſt: atque eiſdem, quibus diateſſaron dividitur, et eodem ordine diſpoſitis, quo tria ipſius intervalla, tribus in locis bis ſingula in ſingulis oſtendimus collocari. Tribus enim locis reſpondent tres homines: primus graviſſimo, ſecundus medio, tertius acutiſſimo. Et tres res diverſæ magnitudinis, tribus intervallis etiam variæ quantitatis, maxima tono majori, media minor, minima ſemitonio. Conficetur autem hic luſus 24 lapillis, ex quibus primo unum, ſecundo duos, tertio tres divinaturus ipſe tradit; ea lege, ut ex 18 reliquis, qui rem maximam accipiet, tot, quot habet: qui mediam, bis totidem: qui minimam, totidem quater aſſumat: quo ex eorum, qui ſupererunt numero, quæ cuique obvenerit, poſſit cognoſcere. Nam ſi primo modo fiet diſtributio, relinquetur unus: ſi fiet ſecundo, duo: ſi tertio, tres: ſi quatuor, quinque: ſi quinto, ſex: et ſi denique ſexto, ſeptem. Neque quatuor unquam poterunt ſupereſſe, cujus duplex ratio poteſt aſſignari. Altera, ex arbitrio inſtituentis ab ipſa rei veritate forſitan illi non cognita ad luſum ſic inſtituendum impulſi,

'Haud equidem ſine mente reor, ſine numine divûm.'

Altera ex æterna rationis harmonice diſpoſitione deſumpta. Quod autem ad inſtituentem attinet, quatuor id circo remanere non poſſunt, quoniam primus, et tertius lapillos impares ſuſceperunt: et cum ex lege tot, quot habent, accipere teneantur, ſi maximam habebunt, aſſument impares: quibus ex paribus ſublatis, impares relinqui neceſſe eſt, quod alterutri bis evenire continget, unde quater impares reſtabunt. Et cum ſecundus etiam bis maximam poſſit accipere, quoniam habet pares, totidem aſſumptis relinquentur pares: nam reliquos neceſſe eſt pares aſſumere, cum duplicare, et quadruplicare lapillos, quos habent, teneantur. Quod bis evenire continget; aut enim primus mediam habebit, et tertius minimam, et reſtabunt duo; aut contra, et reſtabunt ſex. Et cum maxima ſecundo ter evenire nequeat, conſtat, tertiam parem, qui quatuor eſt, nullo modo poſſe relinqui. Sed multo verior, et fortior eſt, quæ ex ratione harmonica deſumitur. Nam quemadmodum in ſeptem ſonis diapaſon oſtenſum eſt, à ſex illorum diateſſaron in acutem protrahi poſſe, qui ſunt primus, ſecundus, tertius, quintus, ſextus, ſeptimus: et quartum præteriri neque in eo reperiri poſſe: ſic etiam in luſu ipſo præteritur quarta dictio, quæ ocioſa eſt; quod non ita evenit in harmoniæ inſtrumentalis compoſitione. Quandoquidem (ut dictum eſt) ſignificat tritonum, quod à quarto ſono inter ſeptem ſonos diapaſon invenitur, cum à ſex aliis omnibus diateſſaron inveniatur. Unde etiam in ſeptem diapaſon ſpeciebus, quæ à ſeptem ſonis oriuntur, ſex arithmeticè dividi poſſunt; una verò nequaquam, quæ a C cum prima ſit, progrediendo in acutum, erit quarta. Hujus autem luſus neutiquam ego mentionem feciſſem, ne in re tam ſeria ludere velle viderer, niſi ad rem, qua de agimus, faciliùs explicandam, aptiſſimum eſſet exemplum. Quod eò libentius feci, quoniam eum comperi ex profeſſo traditum à Beda, cognomento Venerabili, viro graviſſimo et in divinis literis, ac ſecularibus diſciplinis eruditiſſimo. Unde conjectari licet, ante mille annos excogitatum fuiſſe. Salinas de Muſica, lib. IV. cap. v.

have

have been but three in number, namely, the Dorian, the Phrygian, and the Lydian *: the firſt proceeding from E to e, the ſecond from D to d, and the third from C to c †, how theſe are generated ſhall be made appear.

And firſt it is to be remarked that the place of the diazeuctic tone is the characteriſtic of every mode. In the Dorian the diazeuctic tone was ſituated in the middle of the heptachord, that is to ſay, it was the interval between meſe or a, and parameſe ♮, the chords meſe and parameſe being thus ſtationed in the middle of the ſyſtem, three in the acute, namely, Trite diezeugmenon, Paranete diezeugmenon, and Nete diezeugmenon; and three in the grave, namely, Lychanos meſon, Parhypate meſon, and Hypate meſon, determined the ſpecies of diapaſon proper to the Dorian mode. The ſeries of intervals that conſtituted the Dorian mode, had its ſtation in the middle of the lyre, which conſiſted, as has been already mentioned, of fifteen chords, comprehending the ſyſtem of a diſdiapaſon; and to characteriſe the other modes, authors make uſe of a diapaſon with preciſely the ſame boundaries; and that becauſe the extreme chords, both in remiſſion and intenſion, are leſs grateful to the ear than the intermediate ones. Ptolemy takes notice of this, ſaying, that the ear is delighted to exerciſe itſelf in the middle melodies ‡: and he therefore adviſes, for the inveſtigation of the modes, the taking the diapaſon as nearly as may be from the middle of the lyre ‖.

The Dorian Meſe being thus ſettled at a, and the poſition of the diazeuctic tone thereby determined, a method is ſuggeſted for diſcovering the conſtitution of the other ſix modes, namely, the Mixolydian, Lydian, Phrygian, Hypolydian, Hypophrygian, and Hypodorian, making together with the Dorian, ſeven, and anſwering to the ſpecies of the diapaſon; all above which number, according to the expreſs declaration of Ptolemy, are to be rejected as ſpurious §.

But in order to render this conſtitution intelligible, it is neceſſary to take notice of a diſtinction made by Ptolemy, lib. II. cap. xi. between the natural, or, which is the ſame, the Dorian Meſe and the modal Meſe; as alſo between every chord in the lyre or

* Ptolem. Harm. lib. II. cap. vi. Wallis Append. de Vet. Harm. p. 312.
† Vide Kirch. Muſurg. tom. I. cap. xvi. ‡ Harmonicor. lib. II. cap. xi.
‖ Ibid. lib. II. cap. xi. § Lib. II. cap. viii. ix. xi. ex verſ. Wallis.

great ſyſtem, and its correſponding ſound in each of the modes, which he has noted by the uſe of the two different terms Poſitions and Powers. In the Dorian mode theſe coincided, as for example, the Meſe of the lyre, that is to ſay the Meſe in poſition, was alſo the Meſe in power, the Proſlambanomenos in poſition was alſo the Proſlambanomenos in power, and ſo of the reſt *.

But in the other modes the caſe was far otherwiſe; to inſtance, in the Phrygian, there the Meſe in poſition was the Lychanos meſon in Power, and the Proſlambanomenos in poſition the Paranete hyperboleon in power. In the Lydian the Meſe in poſition was the Parhypate meſon in power, and the Proſlambanomenos in poſition was the Trite hyperboleon in power; and to the rule for tranſpoſition of the Meſe the other intervals were in like manner ſubject.

From this diſtinction between the real and the nominal or potential Meſe followed, as above is noted, a change in the name of every other chord on the lyre, which change was regulated by that relation which the ſeveral chords in each mode bore to their reſpective Meſes, and the term Meſe not implying any thing like what we call the Pitch of the ſound, but only the place of the diazeuctic tone in the lyre, this change of the name became not only proper, but abſolutely neceſſary: nor is it any thing more than is practiſed at this day, when by the introduction of a new cliff, we give a new name, not only to One, but a ſeries of ſounds, without diſturbing the order of ſucceſſion, or aſſigning to them other powers than nature has eſtabliſhed.

The following ſcale, taken from the notes of Dr. Wallis on the eleventh chapter of the ſecond book of the Harmonics of Ptolemy, exhibits the poſition on the lyre, of each of the modal Meſes.

* Vide Sir Francis Stiles on the Modes, pag. 702

By the Meſe in power is to be underſtood not the actual Meſe or the middle chord of the ſeptenary, but that which marks the poſition of the diazeuctic tone which varies in each mode. In the Dorian, for inſtance, it holds the middle or fourth, in the Phrygian the third, and in the Lydian the ſecond place, reckoning from the acute towards the grave. See the diagram of the ſpecies of diapaſon in the ſeven Ptolemaic modes hereafter inſerted.

aa Nete hyperboleon		
g Paranete hyperboleon		
f Trite hyperboleon		
e Nete diezeugmenon		
d Paranete diezeugmenon	Mixolydian	MESE
c Trite diezeugmenon	Lydian	
ㅂ Parameſe	Phrygian	
a Meſe	Dorian	
G Lychanos meſon	Hypolydian	
F Parhypate meſon	Hypophrygian	
E Hypate meſon	Hypodorian	
D Lychanos hypaton		
C Parypate hypaton		
ㅁ Hypate hypaton		
A Proſlambanomenos *		

Now that diverſity of ſtations for the Meſe above repreſented, neceſſarily implies the diſlocation of the diazeuctic tone for every mode; and from the rules in the tenth chapter of the ſecond book of Ptolemy, for taking the modes, it follows by neceſſary conſequence that in the Mixolydian mode the diazeuctic tone muſt be the firſt interval, reckoning from acute to grave; in the Lydian the ſecond, in the Phrygian the third, in the Dorian the fourth, in the Hypolydian the fifth, in the Hypophrygian the ſixth, and in the Hypodorian the laſt †.

The ſituation of the Meſe, and conſequently of the diazeuctic tone being thus adjuſted, the component intervals of the diapaſon above and below it, follow of courſe as they ariſe in the order of nature; and we are enabled to ſay not only that the ſpecies of diapaſon anſwering to the ſeveral modes in their order are as follow:

* Ptolem. Harmonicor. ex verſ. Wallis, pag. 137, in not.

† Sir Francis Stiles on the Modes, pag. 709. And ſee the diagram of the ſeven Ptolemaic modes hereinafter inſerted.

Mixolydian	from	B to b
Lydian		C to c
Phrygian		D to d
Dorian		E to e
Hypolydian		F to f
Hypophrygian		G to g
Hypodorian		A to a, or a to aa *

But that the following is the order in which the tones and ſemitones occur in each ſeries, proceeding from grave to acute.

Mixolydian	Semitone, tone, tone, ſemitone, tone, tone, tone.
Lydian	Tone, tone, ſemitone, tone, tone, tone, ſemitone.
Phrygian	Tone, ſemitone, tone, tone, tone, ſemitone, tone.
Dorian	Semitone, tone, tone, tone, ſemitone, tone, tone.
Hypolydian	Tone, tone, tone, ſemitone, tone, tone, ſemitone.
Hypophrygian	Tone, tone, ſemitone, tone, tone, ſemitone, tone.
Hypodorian	Tone, ſemitone, tone, tone, ſemitone, tone, tone ‡.

And this, according to Ptolemy, is the conſtitution of the ſeven modes of the ancients.

* Sir F. S. on the Modes, 708. Kirch. Muſurg. tom. I. cap. xvi.

† Upon the conſtitution of the firſt of the above modes a great difficulty ariſes, namely, how to reconcile it to the rules of harmonical progreſſion, for it is expreſsly ſaid by Kircher and alſo by Sir Francis Stiles, in his Diſcourſe on the Modes, pag. 407, and may be inferred from what Ptolemy ſays concerning them in his Harmonics, lib. II. cap. x. that the Mixolydian anſwers to the ſpecies of diapaſon from Hypate hypaton to Parameſe, that is to ſay, from ♮ to ♮, and that the ſemitones in it are the firſt and fourth intervals in that ſeries; now if this be the caſe, as moſt clearly it is, the interval between the chord ♮ and the chord Parypate meſon or F muſt be a ſemidiapente, which is a falſe relation, ariſing from two inconcinnous chords, and conſequently is unfit for muſical practice.

Again, in the Hypolydian, from Parhypate meſon to Trite hyperboleon, or F to f, a tritone occurs between F and ♮, which is a falſe relation, and renders this ſpecies equally with the former unfit for muſical practice.

Dr. Wallis ſeems to have been aware of this difficulty, and has attempted to ſolve it in a diagram of his, containing a comparative view of the ancient modes with the ſeveral keys of the moderns, by prefixing the flat ſign b, to the Hypate hypaton; agreeable to what he ſays in another place, that in the Mixolydian *mi* is placed in E *la mi*, and to get rid of the tritone in the latter caſe he prefixes a ſecond flat in E *la mi*, excluding thereby *mi* from thence, and placing it in A *la mi re*.

Sir Francis Styles has done the ſame, and farther both theſe writers have made uſe of the acute ſign ♯ for ſimilar purpoſes. In all which inſtances it is ſuppoſed they are juſtified by the practice of the ancients; for it is to be noted that they had a particular tuning for every key, which could be for no other purpoſe than that of diſlocating the intervals from their reſpective ſtations in the ſeveral ſpecies of diapaſon, and might probably reduce them to that arrangement obſervable in the keys of the moderns, which, after all that can be ſaid about them, are finally reſolvable into two.

A

GENERAL HISTORY

OF THE

SCIENCE and PRACTICE

OF

MUSIC.

BOOK II. CHAP. I.

IN the foregoing enquiry touching the modes, endeavours have been uſed to demonſtrate the coincidence between the ſeven genuine modes and the ſeven ſpecies of diapaſon. But ſuppoſing the relation between them to be made out, a queſtion yet remains, namely, whether the progreſſion in each of the modes was in the order preſcribed by nature or not. In what order of ſucceſſion the tones and ſemitones ariſe in each ſpecies of the diapaſon has already been declared; and it ſeems from the repreſentation above given of the ſpecies, that, as the keys of the moderns are ultimately reducible to two, DO MI, and RE FA, ſo the ſeven modes of the ancients by the diſlocation of the Meſe for each, and that conſequent new tuning of the diapaſon for each, which is mentioned by Ptolemy in the eleventh chapter of his ſecond book, are by ſuch diſlocation of the Meſe and new tuning reduced to two. To this purpoſe Dr. Wallis ſeems uniformly to expreſs himſelf and particularly in this his deſcription of the modes taken from Ptolemy.

'Ptolemy, in the eleventh chapter of his ſecond book, and elſe-
'where, makes the Dorian the firſt of the modes, which, as having
'for its Meſe and Parameſe the Meſe and Parameſe both in poſition,
'and power, or, to ſpeak with the moderns, having its *mi* in ♮,

'may

'may be ſaid to be ſituated in the midſt of them all; he therefore 'conſtitutes the Dorian mode ſo as that between the real and aſ-'ſumed names of all the chords, there is throughout a perfect coin-'cidence: and to this mode anſwers that key of the moderns in 'which no ſignature is placed at the head of the ſtave to denote ei-'ther flat or ſharp.

'Secondly he takes a mode more acute than the former by a dia-'teſſaron, which therefore has for its Meſe a chord alſo more acute 'by a diateſſaron, namely the Paranete diezeugmenon of the Dorian, 'and conſequently its Parameſe, which is our *mi*, muſt anſwer to 'the Nete diezeugmenon, that is as we ſpeak, *mi* is placed in E *la* '*mi*, and this he calls the Mixolydian. The moderns for a ſimilar 'purpoſe place a flat on B *fa*, and thereby exclude *mi*.

'And from hence he elſewhere, lib. II. cap. vi. concludes, that 'there is no neceſſity for that which the ancients called the conjunct 'ſyſtem, namely, the ſyſtem from Proſlambanomenos to Nete ſy-'nemmenon, ſince that is ſufficiently ſupplied by the change made 'in Meſe from the Dorian to the Mixolydian mode; for here fol-'lows after the two conjunct tetrachords in the Dorian, from Hypate 'hypaton to the Meſe, that is from B *mi* to A *la mi re*, a third in the 'Mixolydian from its Hypate meſon, which is the Meſe in the Do-'rian to its Meſe, that is from A *la mi re* to D *la ſol re*; ſo that there 'are three conjunct tetrachords from B *mi*, the Hypate hypaton of 'the Dorian, to D *la ſol re*, the Meſe of the Mixolydian.

'Thirdly, as another diateſſaron above that in the acute, could not 'be taken without exceeding that diapaſon in the midſt whereof 'the Meſe of the Dorian was placed, Ptolemy aſſumes in the room 'thereof a diapente towards the grave, which may anſwer to a dia-'teſſaron taken towards the acute, in as much as the ſounds ſo taken, 'differing from each other by a diapaſon, may in a manner be ac-'counted the ſame. The Meſe therefore of this new mode muſt be 'graver by a diapente than that of the Mixolydian; that is to ſay, it is 'the Lychanos hypaton of the Mixolydian, or, which is the ſame, the 'Lychanos meſon of the Dorian, and conſequently its Parameſe will 'be the Meſe of the Dorian; that is as we ſhould ſay, *mi* in A *la mi* '*re*. This is what Ptolemy calls the Hypolydian mode, to denote 'which we put beſides the flat placed before in B *fa* b *mi*, a ſecond

'flat

'flat in E *la mi*, to exclude *mi* from thence, and thereby *mi* is re-
'moved into A *la mi re*.

'Fourthly, as he could not from hence towards the grave, take ei-
'ther a diapente or diateſſaron, without going beyond the above diapa-
'ſon, Ptolemy takes a mode more acute than the Hypolydian by a
'diateſſaron, which he calls the Lydian, the Meſe whereof is the
'Paranete diezeugmenon, and its Parameſe the Nete diezeugmenon
'of the Hypolydian; which latter is alſo the Paranete diezeugmenon
'of the Dorian, that is as we ſpeak, *mi* in D *la ſol re*. We, to denote
'this mode, beſides the two flats already ſet in b and e, put a third
'in A *la mi re*, whereby we exclude *mi* from thence, and transfer it
'to D *la ſol re*.

'Fifthly, as the Mixolydian was taken from the Dorian, and made
'a diateſſaron more acute, ſo is the Hypodorian to be taken from the
'ſame Dorian towards the grave, and made more grave than that by
'a diateſſaron: the Meſe therefore of the Hypodorian is the Hypate
'meſon of the Dorian; and its Parameſe, which is our *mi*, is the
'Parhypate meſon of the Dorian, that is as we ſpeak, *mi* in F *fa ut*.
'We, to denote this mode, leaving out all the flats, place an acute
'ſignature or ſharp in F *fa ut*, which would otherwiſe be elevated
'by a hemitone only, and called *fa*, but is now called *mi*, and ele-
'vated by a whole tone above the next note under it; by reaſon
'whereof the next note in the acute will be diſtant only a hemitone
'from that next under it, and be called *fa*, and *mi* will return in a
'perfect diapaſon in the F *fa ut* next above it.

'Sixthly, as another diateſſaron towards the grave cannot be aſ-
'ſumed from the Hypodorian thus ſituated, without exceeding the
'limits of the above diapaſon, he takes the Phrygian mode a diapente
'more acute, which is the ſame thing in effect, ſince between any
'ſeries in the fifth above and in the fourth below, the diſtance is
'preciſely a diapaſon; the Meſe therefore of this mode is the Nete
'diezeugmenon of the Hypodorian, that is the Parameſe of the
'Dorian, and conſequently its Parameſe is the Trite diezeugmenon
'of the Dorian, that is as we ſpeak, *mi* in c *fa ut*; to denote which,
'beſides the ſharp placed before in F *fa ut*, we put another ſharp in
'C *fa ut*, which would otherwiſe be elevated by only an hemitone
'above the next note under it, but is now elevated by a whole tone;
'and as before it would have been called *fa*, it muſt now be called *mi*;

'and

'and from hence to g *ſol re ut* is now only a hemitone, which is 'therefore to be called *fa*, *mi* returning either in cc *ſol fa* above, or 'in c *fa ut* below.

'Seventhly and laſtly, the Hypophrygian is taken from the Phry-'gian, as above defined, and is diſtant therefrom by a diateſſaron to-'wards the grave. Its Meſe therefore is the Hypate meſon of the 'Phrygian, that is to ſay the Parhypate meſon of the Dorian, 'conſequently its Parameſe, which is our *mi*, is the Lychanos 'meſon of the Dorian. That is as we ſpeak, *mi* in G *ſol re* '*ut*, to expreſs which, the reſt ſtanding as above, we place a 'third ſharp in G *ſol re ut*, which otherwiſe, by reaſon that F *fa ut* 'was made ſharp before, would be elevated by only a hemitone, and 'called *fa*, is now elevated by a whole tone and called *mi*, and there-'fore A *la mi re*, diſtant from G *ſol re ut* by a hemitone, is called *fa*, 'and *mi* returns in g *ſol re ut* above, or in Γ *ut* below.

'The modes being thus determined, we gather from thence that 'the Mixolydian mode is diſtant from the Lydian as in Ptolemy, 'lib. II. cap. x. by a limma, or not to ſpeak ſo nicely, by a hemi-'tone, the Lydian from the Phrygian by a tone, the Phrygian from 'the Dorian by a tone, the Dorian from the Hypolydian by a limma, 'the Hypolydian from the Hypophrygian by a tone, and the Hypo-'phrygian from the Hypodorian alſo by a tone.

'From theſe premiſes Ptolemy concludes, not only that the ſeven 'modes above enumerated are all that are neceſſary, but even that 'there is not in nature room for any more, by reaſon that all the 'chords in the diapaſon are by this diſpoſition occupied: for ſince 'all the chords, from the Hypate meſon to the Paranete diezeugme-'non incluſively, are the Meſe of ſome mode, there is no one of them 'remaining to be made the Meſe of any intermediate mode: for ex-'ample, the Meſe in power of the Hypodorian is in poſition the 'Hypate meſon, and the Meſe in power of the Hypophrygian is the 'Parhypate meſon; and as there is no chord lying between theſe 'two, there is none left, nor can be found to be the Meſe of any in-'termediate mode, or which, as Ariſtoxenus ſuppoſes, may with pro-'priety be called the graver Hypophrygian or Hypoiaſtian; and what 'has been ſaid of the Meſe may with equal reaſon be ſaid of the 'Parameſe, which is our *mi**.'

Thus

* Wallis Append. de Vet. Harmon. pag. 314, et ſeq.

Thus far Dr. Wallis, who has undoubtedly delivered, though in very conciſe terms, the ſenſe of his author; nevertheleſs as the whole of the arguments for reſtraining the number of modes to ſeven is contained in the eleventh chapter of the ſecond book of Ptolemy, and Sir Francis Stiles has beſtowed his pains in an Engliſh verſion thereof, it may not be amiſs to give it as tranſlated by him, and his words are as follow.

'Now theſe being the modes which we have eſtabliſhed, it is 'plain, that a certain ſound of the diapaſon is appropriated to the 'Meſe in power, of each, by reaſon of their being equal in number 'to the ſpecies. For a diapaſon being ſelected out of the middle 'parts of the perfect ſyſtem, that is the parts from Hypate meſon in 'poſition to Nete diezeugmenon, becauſe the voice is moſt pleaſed to 'be exerciſed about the middle melodies, ſeldom running to the ex-'tremes, becauſe of the difficulty and conſtraint in immoderate in-'tenſions and remiſſions, the Meſe in power of the Mixolydian will 'be fitted to the place of Paranete diezeugmenon, that the tone may 'in this diapaſon make the firſt ſpecies; that of the Lydian, to the 'place of Trite diezeugmenon, according to the ſecond ſpecies; that 'of the Phrygian, to the place of Parameſe, according to the third 'ſpecies; that of the Dorian, to the place of the Meſe, making the 'fourth and middle ſpecies of the diapaſon; that of the Hypolydian, 'to the place of Lychanos meſon, according to the fifth ſpecies; 'that of the Hypophrygian, to the place of Parhypate meſon, accord-'ing to the ſixth ſpecies; and that of the Hypodorian, to the place 'of Hypate meſon, according to the ſeventh ſpecies; that ſo it may 'be poſſible in the alterations required for the modes, to keep ſome 'of the ſounds of the ſyſtem unmoved, for preſerving the magnitude 'of the voice, meaning the pitch of the diapaſon; it being impoſſible 'for the ſame powers, in different modes to fall upon the places of 'the ſame ſounds. But ſhould we admit more modes than theſe, as 'they do who augment their exceſſes by hemitones, the Meſes of two 'modes muſt of neceſſity be applied to the place of one ſound; ſo that 'in INTERCHANGING THE TUNINGS of thoſe two modes, the whole 'ſyſtem in each muſt be removed, not preſerving any one of the pre-'ceding tenſions in common, by which to regulate the proper 'pitch of the voice. For the Meſe in power of the Hypodorian for 'inſtance, being fixed to Hypate meſon by poſition, and that of the

'Hypophrygian to Parhypate meſon, the mode taken between theſe 'two, and called by them the graver Hypophrygian, to diſtinguiſh 'it from the other acuter one, muſt have its Meſe either in Hypate, 'as the Hypodorian, or in Parhypate, as the acuter Hypophry-'gian; which being the caſe, when we interchange the tuning of 'two ſuch modes, which uſe one common ſound, this ſound is indeed 'altered an hemitone in pitch by intenſion or remiſſion; but having 'the ſame power in each of the modes, viz. that of the Meſe, all the 'reſt of the ſounds are intended or remitted in like manner, for the 'ſake of preſerving the ratios to the Meſe, the ſame with thoſe taken 'before the mutation, according to the genus common to both 'modes; ſo that this mode is not to be held different in ſpecies from 'the former, but the Hypodorian again, or the ſame Hypophrygian, 'only ſomewhat acuter or graver in pitch, that theſe ſeven modes 'therefore are ſufficient, and ſuch as the ratios require, be it thus 'far declared *.'

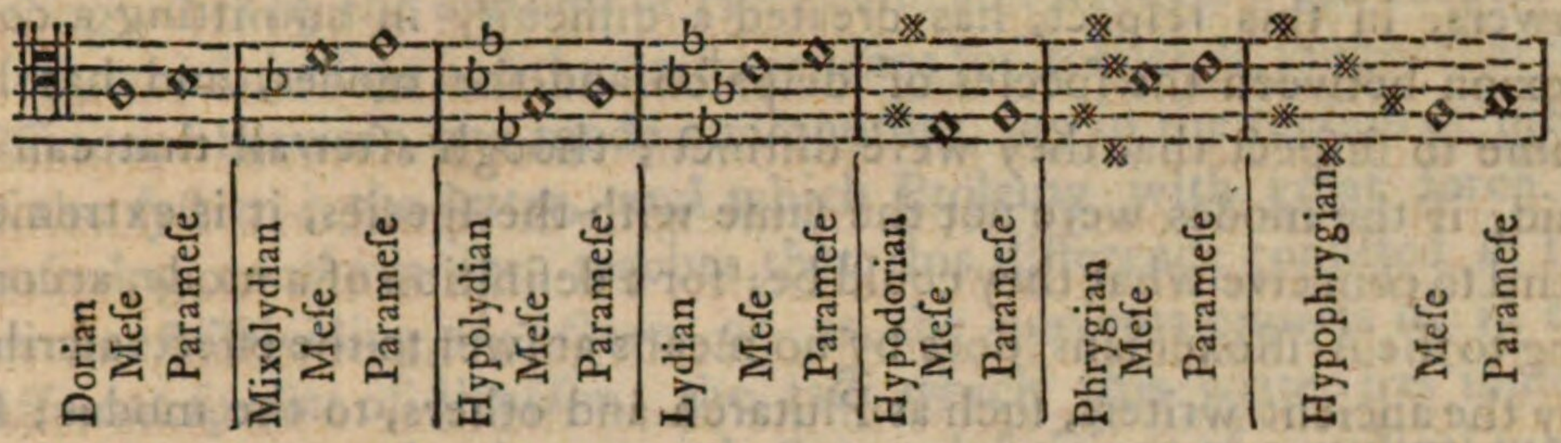
Dr. Wallis continues his argument, and with a degree of perſpicuity that leaves no room to doubt but that he is right in his opinion, ſhews that the modes of the ancients were no other than the ſeven ſpecies of diapaſon: for, as a conſequence of what he had before laid down, he aſſerts that the ſyllable *mi*, to ſpeak, as he ſays, with the moderns, has occupied all the chords by the modes now determined, ſince in the Hypodorian, *mi* is found in F, and alſo in f, which is a diapaſon diſtant therefrom. In the Hypophrygian it is found in G, and therefore alſo in Γ and in g, which are each a diapaſon diſtant therefrom. In the Hypophrygian it is found in a, and therefore in A and aa, each diſtant a diapaſon therefrom. In the Dorian it is found in ⊔, and therefrom in ⊔ and ⊔⊔. In the Phrygian *mi* is found in c, and alſo in c and cc. In the Lydian it is found in d, and therefore in D and dd. And laſtly, in the Mixolydian it is found in e, and conſequently in E and ee; from all which it is evident that there can no one chord remain whereon to place *mi* for any other mode, which would not coincide with ſome one of theſe above ſpecified †.

Nothing need be added to illuſtrate this account of the modes but an obſervation, that inſtead of g and c for the reſpective places of *mi* in the Hypophrygian and Phrygian modes, their true poſitions will be found to be in g♯ and c♯ and their replicates.

The

* Sir F. S. on the Modes, pag. 724. † Append. de Vet. Harm. 315.

The following ſcheme is exhibited by Dr. Wallis to ſhew the correſpondence between the ſeveral keys as they ariſe in the modern ſyſtem, and the modes of the ancients.



By which it ſhould ſeem that the key of A with the leſſer third anſwers to the Dorian; D with the leſſer third to the Mixolydian; G with the leſſer third to the Hypolydian; C with the leſſer third to the Lydian; E with a leſſer third to the Hypodorian; B with the leſſer third to the Phrygian, and F* with the leſſer third to the Hypophrygian.

Theſe are the ſentiments of thoſe who taught that the modes were coincident with the ſpecies of diapaſon. Another opinion however prevailed, namely, that the word Mode or Tone ſignified not ſo properly any determinate Succeſſion of ſounds, as the Place of a ſound; and indeed this is one of the definitions given by Euclid of the word Tone or Mode †; or, in other words, the difference between one tone and another conſiſted in the Tenſion, or, as we ſhould ſay, the Pitch of the ſyſtem ‡. The occaſion of this diverſity of opinion ſeems to be this, Ariſtoxenus, the father of that ſect which rejected the meaſure by ratios, and computed it by intervals, in his treatiſe on Harmonics, book the ſecond, divides the ſcience into ſeven parts, 1. Of ſounds. 2. Of intervals. 3. Of genera. 4. Of ſyſtems. 5. Of tones. 6. Of mutations. 7. Of melopoeïa ‖. Now had he conſidered the ſpecies of diapaſon to have been the ſame as, or even connected with, the modes, it had been natural for him to have placed them under the fifth diviſion, that is to ſay, of tones, or at leaſt under the ſixth, of mutations: inſtead of which we find them ranged under the fourth, namely, that of ſyſtems; and even there it is not expreſsly

* Ptolem. Harmonic. ex verſ. Wallis, pag. 137, in not.
† Introd. Harm. pag. 19, ex verſ. Meibom.
‡ Sir Francis Stiles on the Modes, pag. 698.
‖ Lib. II. pag. xxxv. et ſeq. ex verſ. Meibom.

ſaid, though from their denominations, and other circumſtances it might well be inferred, that the ſpecies of diapaſon had a relation to the modes *. The ſilence of Ariſtoxenus, and indeed of all his followers, in this reſpect, has created a difficulty in admitting a connexion between the ſpecies of diapaſon and the modes, and has led ſome to ſuſpect that they were diſtinct; though after all that can be ſaid, if the modes were not the ſame with the ſpecies, it is extremely hard to conceive what they could be; for a definition of a mode, according to the Ariſtoxenians, does by no means anſwer to the effects aſcribed by the ancient writers, ſuch as Plutarch and others, to the modes; for inſtance, can it be ſaid of the Dorian that it was grave and ſolemn, or of the Phrygian that it was warlike, or that the Lydian was ſoft and effeminate, when the difference between them conſiſted only in a different degree of intenſion or remiſſion; or, in other words, a difference in reſpect of their acumen or gravity? On the other hand, the keys of the moderns, which, as already has been ſhewn, anſwer to the modes of the ancients, have each their characteriſtic, ariſing from the different meaſures of their component intervals; thoſe with the minor third are all calculated to excite the mournful affections; and yet amongſt theſe a difference is eaſily noted: the funereal melancholy of that of F is very diſtinguiſhable from the cloying ſweetneſs of that of A; between thoſe with the greater third a diverſity is alſo apparent, for neither is the martial ardour of the key D at all allied to the hilarity that diſtinguiſhes the key E, nor the plaintive ſoftneſs of E b to the maſculine energy of B b; but ſurely no ſuch diverſity could exiſt, if the ſole difference among them lay in the Pitch, without regard to their component intervals.

This difficulty, whether greater or leſs, ſeems however to be now removed by the induſtry and ingenuity of the above-named Sir Francis Stiles, who in the diſcourſe ſo often above-cited, namely, his Explanation of the Modes or Tones in the ancient Græcian Muſic, has reconciled the two doctrines, and ſuggeſted a method for demonſtrating that to adjuſt the pitch of any given mode is alſo to adjuſt the ſucceſſion of its intervals, the conſequence whereof is a diſcovery that the two doctrines, though ſeemingly repugnant, are in reality one and the ſame. The reaſonings of this very able and accurate writer are ſo very cloſe and ſcientific, that it is

* Vide Sir Francis Stiles on the Modes, pag. 704.

is not eaſy to deliver his ſenſe in other terms than his own; however it may not be amiſs to give a ſhort ſtate of his arguments.

The two doctrines which he has undertaken thus to reconcile, he diſtinguiſhes by the epithets of Harmonic and Muſical; the former of theſe, which he ſays had the Ariſtoxeneans for its friends, taught that the difference between one mode and another, lay in the tenſion or pitch of the ſyſtem; the latter, and which Ptolemy with great force of reaſoning contends for, teaches that this difference conſiſted in the manner of dividing an octave, or, as the ancients expreſs it, in the different ſpecies of diapaſon: the taſk which this writer has undertaken is, to ſhew that between theſe two definitions of a muſical mode there is a perfect agreement and coincidence.

In order to demonſtrate this he ſhews, pag. 701, from Bacchius, pag. 12, edit. Meibom. that the Mixolydian mode was the moſt acute, the Lydian graver by a hemitone, the Phrygian graver than the Lydian by a tone, the Dorian graver than the Phrygian by a tone, the Hypolydian graver than the Dorian by a hemitone, the Hypophrygian graver than the Hypolydian by a tone, and the Hypodorian graver than the Hypophrygian by a tone*. He adds, 'that as 'the Guidonian ſcale anſwers to the ſyſtem of the ancients in its na- 'tural ſituation, which was in the Dorian mode, and our A *la mi re* 'conſequently anſwers to the pitch of the Dorian Meſe, we have a 'plain direction for finding the abſolute pitch of the Meſes for all the 'ſeven in our modern notes, and they will be found to ſtand thus:

Mixolydian Meſe in - -	d
Lydian in - - -	c♯
Phrygian in - - -	b
Dorian in - - -	a
Hypolydian in - -	g♯
Hypophrygian in - -	f♯
Hypodorian in - -	e †

But to underſtand this doctrine as delivered by the ancients, the ſame author ſays it will be neceſſary to examine how the Meſes of the ſeven modes were ſtationed upon the lyre; and in order to that

* Sir F. S. on the Modes, 701.

† Ibid. Dr. Wallis, in his edition of Ptolemy, pag. 137, aſſigns c, g, and f natural, for the poſitions of the Lydian, Hypolydian, and Hypophrygian Meſe; but Sir Francis Stiles, for reaſons mentioned in his diſcourſe, pag. 703, places them in c♯, g♯, and f♯.

to

to conſider the ſtructure of the inſtrument; this he explains in the following words: 'The lyre, after its laſt enlargement, conſiſted of 'fifteen ſtrings, which took in the compaſs of a diſdiapaſon or double 'octave; theſe ſtrings were called by the ſame names as the fifteen 'ſounds of the ſyſtem, and when tuned for the Dorian mode correſ-'ponded exactly with them. Indeed there can be no doubt but that 'the theory of the ſyſtem had been originally drawn from the prac-'tic of the lyre in this mode, which was the favourite one of the 'Greeks, as the lyre was alſo their favourite inſtrument. In this 'mode then the Meſe of the ſyſtem was placed in the Meſe of the 'lyre, but in every one of the reſt it was applied to a different ſtring, 'and every ſound in the ſyſtem tranſpoſed accordingly. Hence aroſe 'the diſtinction between a ſound in Power and a ſound in Poſition; 'for when the ſyſtem was tranſpoſed from the Dorian to any other 'mode, ſuppoſe for inſtance the Phrygian, the Meſe of the lyre, 'though ſtill Meſe in poſition, acquired in this caſe the power of the 'Lychanos meſon; and the Parameſe of the lyre, though ſtill Para-'meſe in poſition, acquired the power of the Meſe. In theſe tranſpo-'ſitions, one or more of the ſtrings always required *new tunings*, to pre-'ſerve the relations of the ſyſtem; but notwithſtanding this alteration 'of their pitch they retained their old names when ſpoken of, in reſ-'pect to their poſitions only; for the name implied not any particu-'lar pitch of the ſtring, but only its place upon the lyre in the nume-'rical order, reckoning the Proſlambanomenos for the firſt *.'

Theſe are the ſentiments of the above-cited author, with reſpect to the Harmonic doctrine: the Muſical has been already explained; or if any thing ſhould be wanting, the ſcale hereinafter inſerted, ſhewing the poſition of the Meſe, and the ſucceſſion of chords in each of the modes in a comparative poſition with thoſe in the natural ſyſtem, will render it ſufficiently intelligible.

CHAP. II.

IT now remains to ſhew the method by which this author propoſes to reconcile the two doctrines. He ſays that by the Harmonic doctrine we are told the pitch of the ſyſtem for each mode; and by the Muſical, in what part of the ſyſtem to take the ſpecies of diapaſon,

* Sir Francis Stiles on the Modes, pag. 702.

ſon, and that by combining the two directions we gain the following plain canon for finding any mode required *.

C A N O N.

'First pitch the ſyſtem for the mode, as directed by the 'harmonic doctrine; then ſelect from it the diapaſon, directed 'by the muſical; and we have the characteriſtic ſpecies of the 'mode in its true pitch †.'

To make this more plainly appear, he has annexed a diagram of the ſpecies of diapaſon, which is here alſo exhibited, and which he ſays will ſhew at what pitch of the Guidonian ſcale each ſound of the diapaſon is brought out by the canon for each of the ſeven modes; and that as in the conſtruction of this diagram the directions of the canon have been ſtrictly purſued, ſo it will appear that the reſult of it is in all reſpects conformable to the principles of both doctrines. 'Thus,' continues he, 'in the Dorian, for inſtance, it will be ſeen 'that the Meſe is placed in A *la mi re*, and that the reſt of the ſounds 'exhibited in that diapaſon, are placed at the proper diſtances, for preſerving the order of the ſyſtem as required by the harmonic doctrine. 'It will alſo be ſeen that the diapaſon ſelected lies between Hypate meſon and Nete diezeugmenon; that the ſemitones are the firſt interval in the grave, and third in the acute; and that the Diazeuctic tone is in the fourth interval, reckoning from the acute. All 'which circumſtances were alſo required by the muſical doctrine for 'this mode; and in the reſt of the modes all the circumſtances required by each doctrine will in like manner be found to obtain: 'So that no objection can well be raiſed to the principles on which 'the diagram has been framed, by the favourers of either doctrine ſeparately: and the very coincidence of the two doctrines therein 'might furniſh a probable argument in juſtification of the manner in 'which I have combined them in the canon ‡.'

Here follows the diagram of the ſeven ſpecies of diapaſon abovementioned.

* Ibid. 710. † Ibid. ‡ Ibid. 711.

SPECIES of the DIAPASON in the Seven Modes admitted by PTOLEMY.

MIXOLYDIAN.		LYDIAN.		PHRYGIAN.		DORIAN.		HYPOLYDIAN.		HYPOPHRYGIAN.		HYPODORIAN.	
e Parameſe	e	Trite diez.	e	Paranete diez.	e	Nete diezeug.	e	Trite hyperb.	e	Paran. hyperb.	e	Nete hyperb.	
d Meſe (Diaz. tone)	d♯	Parameſe	d	Trite diezeug.	d	Paranete diez.	d♯	Nete diezeug.	d	Trite hyperb.	d	Paran. hyperb.	
	c♯	Meſe (Diaz. tone)	c♯	Parameſe	c♯	Paranete diez.	c♯	Paranete diez.	c♯	Nete diezeug.			
c Lich. meſon					c	Trite diezeug.					c	Trite hyperb.	
	b	Lich. meſon	b	Meſe (Diaz. tone)	b	Parameſe	b	Trite diezeug.	b	Paran. diez.	b	Nete diezeug.	
b♭ Parhyp. meſon							a♯	Parameſe					
a Hypat. meſon	a	Parhyp. meſon	a	Lich. meſon	a	Meſe (Diaz. tone)			a	Trite diezeug.	a	Paran. diez.	
	g♯	Hypat. meſ.					g♯	Meſe (Diaz. tone)	g	Parameſe			
g Lich. hypaton			g	Parhyp. meſ.	g	Lich. meſ.					g	Trite diezeug.	
	f♯	Lich. meſon	f♯	Hyp. meſon			f♯	Lich. meſ.	f♯	Meſe (Diaz. tone)	f♯	Parameſe	
f Parhyp. hyp.					f	Parhyp. meſ.							
e Hypat. hyp.	e	Parhyp. hyp.	e	Lich. hyp.	e	Hyp. meſ.	e	Parhyp. meſ.	e	Lich. meſe	e	Meſe (Diaz. tone)	

By the help of the above diagram it is no very difficult matter to aſcertain, beyond the poſſibility of doubt, the ſituations of the different modes with reſpect to each other; or, in other words, to demonſtrate that ſix of them were but ſo many tranſpoſitions from the Dorian, which occupies the middle ſtation: whether after ſuch tranſpoſition the intervals remained the ſame or not, is a ſubject of diſpute.

With regard to this queſtion it may be obſerved, that throughout the whole of Ptolemy's treatiſe, nothing is to be met with that leads to a compariſon between the modes of the ancients and the keys of the moderns; for it ſeems that with the former the characteriſtic of each mode was the poſition of the diazeuctic tone, and the conſequent arrangement of the tones and ſemitones correſponding with the ſeveral ſpecies of diapaſon, to which they reſpectively anſwer. But the keys of the moderns are diſtinguiſhed by the final chord, and therefore unleſs they could be placed in a ſtate of oppoſition to each other, it is very difficult to demonſtrate that this or that key anſwers to this or that of the ancient modes, or unleſs a ſeveral tuning of the lyre for each mode be ſuppoſed, to aſcertain the conſtituent intervals of the latter. Sir Francis Stiles ſeems to have been aware of this difficulty, for though in page 708 of his diſcourſe, he has given a diagram in which the Mixolydian mode is made to anſwer to the ſeries from ♮ to ♮, and the others in ſucceſſion, to the ſucceeding ſpecies, he means nothing more by this than to compare them ſeverally with a ſpecies of diapaſon ſelected from the middle of the lyre, without regard to the fundamental chord or key-note.

Neither does the diagram of the ſeven ſpecies of diapaſon, given by him and above inſerted, afford any intelligence of this kind; and but for a hint that he has dropped at the cloſe of his diſcourſe, that the Hypodorian anſwers exactly to our A *mi la*, with a minor third, and the Lydian to our A *mi la*, with a major third *, we ſhould be

* The anonymous author of a Letter to Mr. Aviſon, who by the way was the late reverend and learned Dr. Jortin, had in that letter blamed Sanadon and Cerceau for affirming, in their Obſervations on Horace, that the Dorian mode anſwered exactly to our A *mi la* with a minor third, and the Phrygian to our A *mi la* with a major third; from hence Sir Francis Stiles takes occaſion to give the above as his opinion of the matter. In which, after all, it ſeems that he is miſtaken, and that the author of the Letter was in the right: his words are theſe, and they are well worth noting.

totally at a loſs with reſpect to his ſentiments touching the affinity between the ancient modes and the modern keys.

That there was ſome ſuch affinity between the one and the other is beyond a doubt * ; and we ſee Dr. Wallis's opinion of the matter in the diagram above inſerted from his notes on the eleventh chapter, lib. II. of his author, containing a comparative view of the keys with the modes. And though it is to be feared that there is not that preciſe agreement between them which he has ſtated, there is good ground to ſuppoſe that, as in the keys, the ſucceſſion of intervals is in the order which the ſenſe approves, ſo the ſucceſſion in the modes could not but have been in ſome degree alſo grateful to the ear.

This ſuppoſition is founded on a paſſage in the eleventh chapter of the ſecond book of Ptolemy, importing no leſs than that each of the modes required a peculiar tuning, and theſe tunings have been ſeverally inveſtigated, and are given by Sir Francis Stiles; for what purpoſe then it may be aſked, but to render the intervals grateful to the ſenſe, was a new tuning of the lyre for every mode neceſſary; and what could that terminate in, but two conſtitutions, in the one whereof the interval between the fundamental chord and its third was a ſemiditone, and in the other a ditone; and when the lyre was ſo tuned,

' Sanadon and Cerceau in their obſervations on Horace, Carm. v. 9.

" Sonante mixtum tibiis carmen lyra,
" Hac Dorium, illis barbarum.

' affirm that the Modus Dorius anſwered exactly to our A *mi la* with a minor third, and ' the Modus Phrygius to our A *mi la* with a major third: but ſurely this is a muſical ' error, and a dream from the ivory gate. Two modes, with the ſame tonic note, the ' one neither acuter nor graver than the other, make no part of the old ſyſtem of modes.'

This is very true; and the reaſon of Sir Francis Stiles for aſſerting the contrary was that he had deceived himſelf into a different opinion by placing the acute ſigns to f c and g in the Lydian, thereby giving to that ſeries the appearance of the key of A♯. But upon his own principles the Lydian anſwers to our key of C *fa ut* with the major third,

Tone, tone, ſemitone, tone, tone, tone, ſemitone.

DO RE MI FA SOL RE MI

For though the acute ſigns require that the final chord be A, the ſucceſſion of intervals is that proper to the diapaſon C c.

* Sethus Calviſius ſeems to have been of this opinion in the following paſſage, cited by Butler in his Principles of Muſic, pag. 86. in not. ' In hoc chorali cantu, diligentiſſime ' conſideret huic Arti deditus, qui ſint ubique; Modulationis progreſſus, quod Exordium, ' et quis Finis: ut cognoſcat ad quem modum referatur. Inde enim tam primarium ' illius Modi clauſulam, quam Secundariam, eruere, et convenientibus locis annotare, et ' inſerere poterit.' Calvis, c. 17, and Butler himſelf adds that this is the general ſentiment of muſicians. Notwithſtanding that Cælius Rhodoginus out of Caſſiodorus diſtinguiſhes the modes by their ſeveral effects. Ibid.

what

what became of the ſeven ſpecies of diapaſon? The anſwer to this latter demand is, that as there ſeem to be in nature but the two ſpecies abovementioned, proceeding, as will preſently be ſhewn, from A and C reſpectively, the remaining five were rejected, and conſidered as ſubjects of mere ſpeculation.

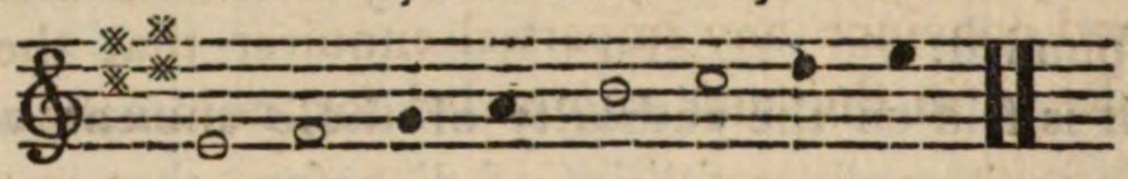
But before we proceed to refute the opinion of thoſe who without knowing, or even ſuſpecting, that the tuning of the lyre was different in each mode, contend, that there are in nature ſeven, not merely nominal, but real modes, it is but juſt to ſtate the reaſons on which it is founded.

And firſt it is ſaid on the authority of thoſe ancient writers who define a mode to be a given ſpecies of diapaſon, that as there are in nature ſeven ſuch ſpecies, ſo are there ſeven modes, in each whereof the ſucceſſion of tones and ſemitones muſt be in that order which nature has eſtabliſhed, or as they ariſe in the ſcale, without interpoſing any of thoſe ſignatures to denote remiſſion or intenſion, which are uſed for that purpoſe by the moderns. They ſay farther that none of the ſpecies were at any time rejected by the ancients as unfit for practice; and from thence take occaſion to lament the depravity of the modern ſyſtem, which admits of no other diverſity of modes or keys than what ariſes from the difference between the major and the minor third; for, ſay they, and they ſay truly, the modern ſyſtem admits in fact of but two, namely A and C; the firſt the prototype of the flat, as the latter is of the ſharp keys, all the reſt being reſpectively reſolvable into one or the other of theſe *.

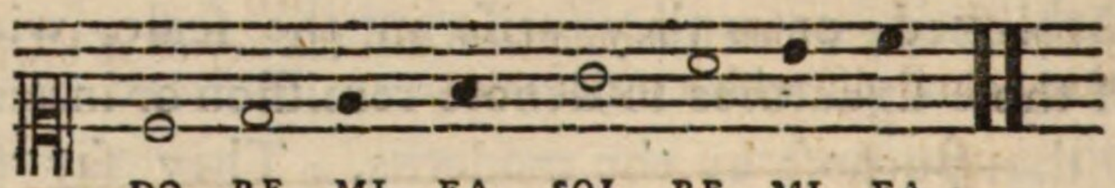
* In the Diſſertation ſur le Chant Gregorien of Monſieur Nivers, Paris 1688, chap. xii. it is ſaid that the eight eccleſiaſtical tones, which all men know have their foundation in the ancient modes, are reducible to four, and in ſtrictneſs to two, as being no otherwiſe eſſentially diſtinguiſhed than by the greater and leſſer third; and the ſame may be inferred from a well-known diſcourſe, entitled a Treatiſe on Harmony, containing the chief rules for compoſing in two, three, and four parts, which though at firſt printed in 1730 by one of his diſciples, was indiſputably the work of Dr. Pepuſch, and was afterwards publiſhed by him with additions, and examples in notes. In this tract is a chapter on tranſpoſition, in which the reader is referred to a plate at the end of the work, containing a table of the keys, with their characteriſtics, and a ſtave of muſical lines, with certain letters inſcribed thereon, which, for the purpoſe of reſolving any tranſpoſed or factitious key into its natural tone by the annihilation of the flat or ſharp ſignatures, he is directed to cut off and apply to the abovementioned table, by means whereof it may be diſcovered that all the flat keys are tranſpoſitions from that of A, and all the ſharp from that of C. This is a proceſs ſo merely mechanical, that no one can be the wiſer for having performed it, and is rather calculated to diſguiſe than explain the true method of reducing a tranſpoſition to its natural key. But in a ſmall tract, entitled, Elements ou Principes de Muſique mis dans un novel Ordre, par M. Loulie, printed at Amſterdam in 1698, we meet with a notable rule or

But what, if after all, the ear will not recognize any other ſucceſſion of intervals than is found in the conſtitution of the keys A and C?

canon for this purpoſe, which fully anſwers the deſign of its invention. This author premiſes that the dieſes, or what we ſhould call the ſharps, placed at the beginning of the muſical ſtave, ariſe by fifths, beginning from F, that is to ſay, C G D A E, and that the B mols or flats ariſe by fourths, beginning from B in this order, E A D G C. The rule or canon which he deduces from hence is this: In keys which are determined by ſharp ſignatures, call the laſt ſharp SI; or as any but a Frenchman would ſay MI, and place or ſuppoſe ſuch a cliff at the head of the ſtave as in a regular courſe of ſolmiſation, will make it ſo. To give an inſtance of the key of E with the major third.



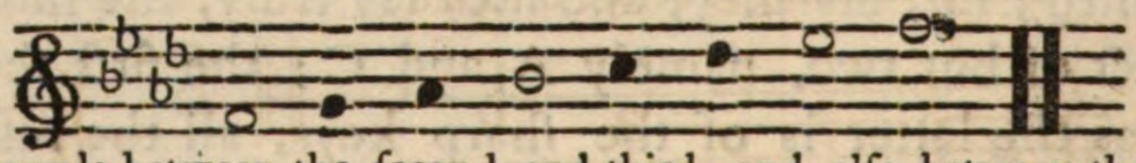
Here the attentive peruſer will obſerve that the interval between the third and fourth, and alſo between the ſeventh and eighth notes, is a ſemitone; and that to make the laſt ſharp D, MI, the tenor cliff muſt be placed on the firſt line of the ſtave, and when this is done as here it is,



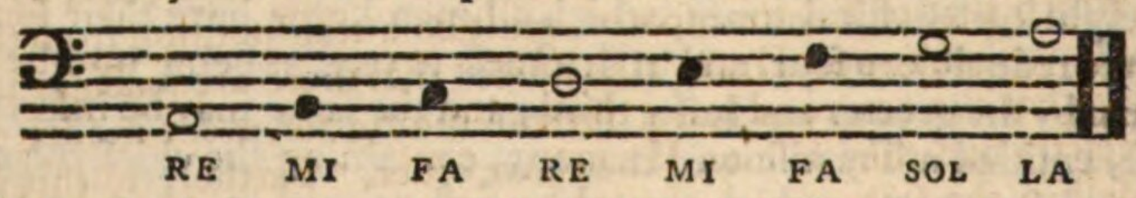
DO RE MI FA SOL RE MI FA

the progreſſion of tones and ſemitones will be exactly in the ſame order as in the key of C, from which this of E is therefore ſaid to be a tranſpoſition.

The canon farther directs in the keys with the flat ſignatures, to call the laſt of the flats FA, and to place or ſuppoſe a cliff accordingly; and to ſhew the effect of the rule in an inſtance of that kind, the following example is given of the key of F with the minor third.



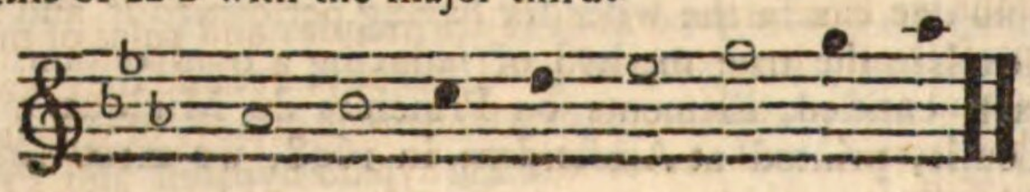
Here the intervals between the ſecond and third, and alſo between the fifth and ſixth notes, are ſemitones: and to make the laſt flat, which is A, FA, it is neceſſary to place the baſs cliff on the fourth line of the ſtave, which annihilates the flat ſignatures, and demonſtrates that the above key of F is a tranſpoſition from that of A with the minor third.



RE MI FA RE MI FA SOL LA

Another rule for the above purpoſe, and which indeed Dr. Pepuſch would communicate to his favourite diſciples, is, in the caſe of keys with the ſharp ſignatures, to call the laſt ſharp B, and count the lines and ſpaces upwards or downwards till the ſtation of a cliff is found; and the placing that cliff accordingly annihilates the ſharps, and beſpeaks the natural key. In keys with the flat ſignatures the rule directs to call the laſt flat F, and count as before.

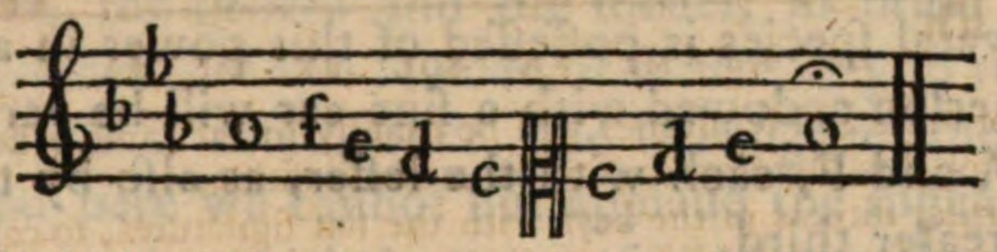
But amongſt the keys with flat ſignatures a diverſity is to be noted, that is to ſay, between thoſe with a major and thoſe with a minor third; for in the former the proceſs muſt be repeated, as in this of A b with the major third.



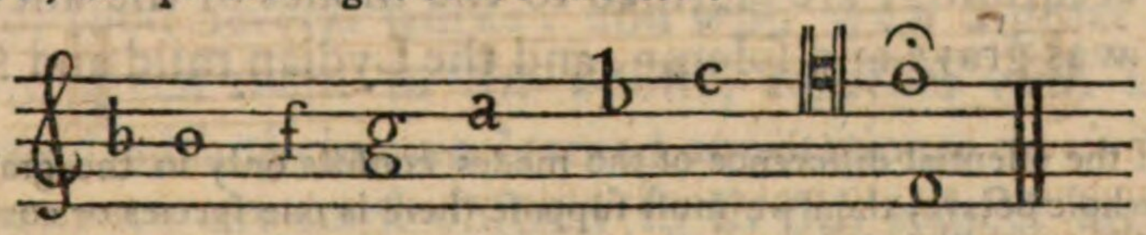
In

The conſequence then ſeems to be that there are in nature no other. Now if it be true that the ſenſe of hearing is averſe to thoſe modulations that have no relation to any fundamental chord, and that it expects, nay longs for ſome one ſound that ſhall at ſtated periods determine the nature of the progreſſion, there is an end of the queſtion. In ſhort, a ſingle experiment of the effect of the Mixolydian mode, which anſwers to the ſeries from ♮ to ♮, in its natural order, and gives to the diapente a ſemitone leſs than its true content, will offend the ear, and convince any impartial enquirer that the exiſtence of ſeven modes is, in the ſenſe contended for, nominal and not real *.

In this inſtance the rule directs to call the laſt flat, which is the key-note, F; and to count on to the place of a cliff: in doing this the cliff will fall on the firſt line, and make the key-note F; by which it ſhould ſeem that the key of A b with the major third is a tranſpoſition from F alſo with a major third.



But as there is in the key of F a flat on b, it is neceſſary to repeat the proceſs, and ſee what key this of F is a tranſpoſition from; and this by the above rule is to be done by calling the flat b F, and proceeding as before directed:



and this key of F will appear to be a tranſpoſition from that of C, and by conſequence that of A b, from which that of F is tranſpoſed, muſt be a tranſpoſition from the key of C alſo.

* Vide ante, pag. 162, and Dr. Wallis aſſerts that there are paſſages in Ptolemy which plainly indicate that the ancients had a ſeveral tuning for every mode, which could not have been neceſſary had they followed the above order. Farther, to this purpoſe Malcolm expreſſes himſelf in the following remarkable paſſages. 'If every ſong kept in one mode, 'there was need for no more than one diatonic ſeries; and by occaſional changing the 'tune of certain chords theſe tranſpoſitions of every mode to every chord may be eaſily 'performed; and I have ſpoken already of the way to find what chords are to be altered 'in their tuning to effect this, by the various ſignatures of ♯ and b: But if we ſuppoſe that 'in the courſe of any ſong a new ſpecies is brought in, this can only be effected by having 'more chords than in the fixt ſyſtem, ſo as from any chord of that, any order or ſpecies of 'octave may be found. On Muſic, pag. 536.

'If this be the true nature and uſe of the tones, I ſhall only obſerve here, that accord-'ing to the notions we have at preſent of the principles and rules of melody, moſt of theſe 'modes are imperfect and incapable of good melody, becauſe they want ſome of thoſe we 'reckon the eſſential and natural notes of a true mode or key, of which we reckon only two 'ſpecies, viz. that from C and A, or the Parhypate hypaton and Proſlambanomenos of 'the ancient fixt ſyſtem. Ibid.

'Again

But notwithſtanding the uniformity of keys in the modern ſyſtem, there is a diverſity among them worth noting, ariſing from that ſurd quantity in the diapaſon ſyſtem, which it has been the labour of ages to attemper and diſtribute among the ſeveral intervals that compoſe it, ſo as not to be diſcoverable; the conſequence of which temperament is ſuch a diverſity in the ſeveral keys, as gives to each a ſeveral effect; ſo that upon the whole it ſeems that the modern conſtitution of the modes or keys is liable to no objection, ſave the want of ſuch a diviſion of the intervals as ſeems to be inconſiſtent with the principles of harmonics, and the eſtabliſhed order of nature.

The ſeveral effects of the modern keys are diſcoverable in the tendency which each has to excite a peculiar temper or diſpoſition of mind; for, not to mention that ſoothing kind of melancholy which is felt on the hearing muſic in keys with the minor third, and the gaiety and hilarity excited by that in keys with the greater third *, each key in the two ſeveral ſpecies is poſſeſſed of this power in a different degree, and a perſon endowed with a fine ear will be variouſly affected by the keys A and F, each with the leſſer, as alſo by thoſe of C and E with the greater third.

Effects like theſe, but to a degree of extravagance that exceeds the bounds of credibility, are aſcribed to the modes of the ancients: that the Dorian was grave and ſolemn, and the Lydian mild and ſoothing †,

' Again, if the eſſential difference of the modes conſiſts only in the gravity or acute-
' neſs of the whole octave, then we muſt ſuppoſe there is one ſpecies or concinnous divi-
' ſion of the octave, which being applied to all the chords of the ſyſtem, makes them
' true fundamentals for a certain ſeries of ſucceſſive notes. Theſe applications may be
' made in the manner already mentioned, by changing the tune of certain chords in ſome
' caſes, but more univerſally by adding new chords to the ſyſtem, as the artificial or
' ſharp and flat notes of the modern ſcale. But in this caſe, again, where we ſuppoſe
' they admitted only one concinnous ſpecies, we muſt ſuppoſe it to be correſponding to
' the octave *a*, of what we call the natural ſcale; becauſe they all ſtate the order of the
' ſyſtema immutatum in the diagram, ſo as it anſwers to that octave.' Ibid. 537.

* Dr. Jortin has diſcovered a new characteriſtic for theſe two ſpecies of keys; he calls one the male, the other the female: the thought is ingenious, and is thus expreſſed by him in a letter publiſhed at the end of the later editions of Aviſon's Remarks on Muſical Expreſſion ' By making uſe of the major and minor third we have two real and
' diſtinct tones, a major and a minor, which may be ſaid to divide muſic, as nature ſeems
' to have intended, into male and female. The firſt hath ſtrength, the ſecond hath ſoft-
' neſs; and ſweetneſs belongs to them both.'

† Milton adopts theſe characteriſtics of the Dorian and Lydian modes:

——— Anon they move
In perfect phalanx to the Dorian mood
Of flutes and ſoft recorders; ſuch as rais'd
To height of nobleſt temper heroes old
Arming to battle. PARADISE LOST, B. I. line 549.

And

may be believed, but who can credit the relation, though of Cicero himſelf, and after him of Boetius *, that by an air in the Phrygian mode played on a ſolitary pipe (one of the ancient tibiæ) a drunken young man, of Tauromenium, was excited to burn down the houſe wherein a harlot had been ſhut up by his rival, and that Pythagoras brought him to his reaſon, by directing the tibiceniſt to play a ſpondeus in a different mode? Or that not the fumes of wine or a diſturbed imagination, rather than the flute of Timotheus, played on in the Phrygian mode, provoked Alexander to ſet fire to Perſepolis.

CHAP. III.

HAVING thus collected into one point of view the ſentiments of the ableſt writers on thoſe two moſt important deſiderata in the ancient muſic, the genera and the modes, in order to trace the ſucceſſive improvements of the ſcience, it is neceſſary to recur to thoſe only genuine ſources of intelligence, the writings of the Greek harmonicians. And here we cannot but applaud the ingenuity and induſtry of thoſe learned men, their remote ſucceſſors, who from ancient manuſcripts, diſperſed throughout the world, have been able to ſettle the text of their ſeveral works; and who with a great degree of accuracy have given them to the public, together with Latin verſions, illuſtrated with their own learned annotations.

Thoſe whom we are moſt obliged to in this reſpect are, Marcus Meibomius, a German; and our countryman Dr. John Wallis: the former of theſe has given to the world ſeven of the ancient Greek writers, namely, Ariſtoxenus, Euclid, Nicomachus, Alypius, Gaudentius, Bacchius Senioris, and Ariſtides Quintilianus; as alſo a Diſcourſe on Muſic, which makes the ninth book of Martianus Capella's Latin work, entitled De Nuptiis Philologiæ et Mercurii; and the

And ever againſt eating cares
Lap me in ſoft Lydian airs. L'ALLEGRO.

And Dryden deſcribes the Lydian by its effects, in theſe words:

Softly ſweet in Lydian meaſures
Soon he ſooth'd his ſoul to pleaſures. ALEXANDER'S FEAST.

From which paſſage it is to be ſuſpected that the poet thought with Cornelius Agrippa and ſome others, that the epithet Lydian referred to the meaſure, whereas it clearly relates to the harmony. But Dryden knew little about muſic.

* De Muſica, lib. I. cap. i.

latter

latter a complete tranſlation of the harmonics of Ptolemy, with notes, and a moſt valuable appendix; as alſo tranſlations of Porphyry and Manuel Bryennius in like manner.

Concerning theſe writers, it is to be obſerved that the Greeks are by far of the greateſt authority; and that their diviſion of muſic into ſeveral branches, as being more ſcientific than that of the Latin writers, is intitled to the preference. The moſt ample of theſe is the diviſion of Ariſtides Quintilianus, which is thus analyzed by his editor Meibomius, in his notes on that author, pag. 207.

- Muſicæ
  - alia eſt pars Theoretica: cujus rurſus partes duæ,
    - Phyſica: quæ dividitur in
      - Arithmeticum.
      - Phyſicam, generi cognominem.
    - Artificialis: quæ dividitur in
      - Harmonicam.
      - Rythmicam.
      - Metricam.
  - alia Practica: cujus item partes duæ,
    - Uſualis: cujus partes
      - Melopœia.
      - Rhythmopœia.
      - Poëſis.
    - Enarrativa: cujus partes
      - Organica.
      - Odica.
      - Hypocritica.

Nevertheleſs, the moſt general is that threefold diviſion of muſic into Harmonica, Rhythmica, and Metrica; the two latter of which, as they relate chiefly to poetry, are but ſuperficially treated of by the harmonic writers. Upon this diviſion of muſic it is obſervable that the more ancient writers were very careful in the titles of their ſeveral treatiſes: ſuch of them as confined their diſcourſes to the elementary part of the ſcience, as namely, Ariſtoxenus, Euclid, Nicomachus, Gaudentius, Ptolemy, and Bryennius, call the ſeveral treatiſes written by them Harmonica; whereas Ariſtides, Bacchius, and Martianus Capella entitle theirs Muſica; as does Boetius, although he was a ſtrict Pythagorean. Porphyry indeed, who profeſſes nothing more than to be a commentator on the harmonics of Ptolemy, inſtitutes another mode of diviſion, and, without diſtinguiſhing the ſpeculative part of the ſcience from the practical, divides it into ſix general heads, namely, Harmonica, Rythmica, Metrica, Organica, Poetica, and Hypocritica;

pocritica; Rythmica he applies to dancing, Metrica to the enunciative, and Poetica to verſes *. The branch of the ſcience, which has been moſt largely treated of by the ancients, is the Harmonica, as will appear by the extracts hereinafter given from their works.

From the relation herein before given of the invention of, and ſucceſſive improvements made in, muſic, a very accurate judgment may be formed of the nature of the ancient ſyſtem, which, together with the ratios of the conſonances, and the doctrine of the genera and the modes, conſtituted the whole of the harmonical ſcience as it ſtood about the year of the world 3500. After which Ariſtoxenus, Euclid, Nicomachus, and other Greek writers made it a ſubject of philoſophical enquiry, and compoſed thoſe treatiſes on harmonics which are ſeverally aſcribed to them, and of which, as alſo of their reſpective authors, a full account will hereafter be given. What was the ſtate of the ſcience previous to the era abovementioned, can only be learned from thoſe particulars relating to muſic, which are to be met with in the ſeveral accounts extant of the life and doctrines of Pythagoras, who, for any thing that can now be collected to the contrary, ſeems indiſputably intitled to the appellation of the Father of Muſic.

PYTHAGORAS, according to the teſtimony of the generality of writers, was born about the third year of the fifty-third Olympiad, which anſwers to the year of the world 3384, and to about 560 years before the birth of our Saviour; and although he was of that claſs of philoſophers called the Italic ſect, he is ſuppoſed to have been a native of Samos, and in conſequence of this opinion is uſually ſtiled the Samian ſage or philoſopher. His father, named Mneſarchus, is re-

* Malcolm has taken notice of this diviſion, but prefers to it that of Quintilian, upon whoſe analyſis he has given the following conciſe and perſpicuous commentary. 'Ariſtides conſiders muſic in the largeſt ſenſe of the word, and divides it into *contemplative* and *active*. The firſt he ſays is either *natural* or *artificial*; the *natural* is *arithmetical*, becauſe it conſiders the proportion of numbers; or *phyſical*, which diſputes of every thing in nature; the *artificial* is divided into *harmonica*, *rythmica* (comprehending the dumb motions) and *metrica*: the *active*, which is the application of the *artificial*, is either *euunciative* (as in oratory) *organical*, (or inſtrumental performance) *odical* (for voice and ſinging of poems) *hypocritical* (in the motions of the pantomimes). To what purpoſe ſome add hydraulical I do not underſtand, for this is but a ſpecies of the organical, in which water is ſomeway uſed, for producing or modifying the ſound. The muſical faculties, as they call them, are *Melopœia*, which gives rules for the tones of the voice or inſtrument; *Rythmopœia*, for motions, and *Poeſis* for making of verſe.' Treatiſe of Muſic, Edinb. 1721, pag. 455.

ported to have been a merchant, or, as ſome ſay, an engraver of rings. Of his travels into various parts of the world for the acquiring of knowledge; of the wonders related of him, or of his doctrines in general, it is needleſs to give an account in this place. It ſeems to be agreed that he left not any thing behind him of his writing, and all that is to be known of his doctrines is grounded on the teſtimony of his diſciples, who were very many, and were drawn to hear him from the moſt diſtant parts of Greece and Italy. Of theſe Nicomachus was one, who becauſe he himſelf has written on the ſcience of harmonics, may well be ſuppoſed to underſtand the doctrines of his maſter; from him therefore, as alſo from others, as namely, Ptolemy, Macrobius, and Porphyry, who, though they lived many years after Pythagoras, were of his ſect, we may with ſome degree of confidence determine as to the tenets of his ſchool. A ſummary of theſe is given by his learned biographer Stanley, in the paſſages here cited; and firſt as to thoſe reſpecting muſic in general, he gives them in theſe words.

'The Pythagoreans define muſic an apt compoſition of contraries, 'and an union of many, and conſent of differents; for it not only 'co-ordinates rythms and modulation, but all manner of ſyſtems. 'Its end is to unite and aptly conjoin. God is the reconciler of 'things diſcordant, and this is his chiefeſt work, according to muſic 'and medicine, to reconcile enmities. In muſic, ſay they, conſiſts 'the agreement of all things, and ariſtocracy of the univerſe. For 'what is harmony in the world, in a city is good government; in 'a family, temperance.'

'Of many ſects, ſaith Ptolemy, that were converſant about har-'mony, the moſt eminent were two, the Pythagoric and Ariſtoxe-'nian: Pythagoras dijudicated it by reaſon, Ariſtoxenus by ſenſe. 'The Pythagoreans, not crediting the relation of hearing, in all 'thoſe things wherein it is requiſite, adapted reaſons to the dif-'ferences of ſounds, contrary to thoſe which are perceived by the 'ſenſes; ſo that by this criterion (reaſon) they gave occaſion of ca-'lumny to ſuch as were of a different opinion.

'Hence the Pythagoreans named that which we now call harmo-'nic Canonic, not from the canon or inſtrument, as ſome imagine, 'but from rectitude; ſince reaſon finds out that which is right by 'uſing harmonical canons or rules even of all ſorts of inſtru-

'ments

'ments framed by harmonical rules, pipes, flutes, and the like. 'They call the exerciſe Canonic, which although it be not canonic, 'yet is ſo termed, becauſe it is made according to the reaſons and 'theorems of canonic; the inſtrument therefore ſeems to be rather 'denominated from its canonic affection. A canonic in general is 'an harmonic who is converſant by ratiocination about that which 'conſiſts of harmony. Muſicians and harmonics differ; muſicians 'are thoſe harmonics who begin from ſenſe, but canonics are Pytha-'goreans, who are alſo called harmonics; both ſorts are termed by a 'general name muſicians.'*

As touching the human voice, the ſame author delivers the following as the Pythagorean tenets.

'They who were of the Pythagorean ſchool ſaid that there are (as of 'one genus) two ſpecies. One they properly named Continuous, and 'the other Diaſtematic (intermiſſive) framing appellations from the 'accidents pertaining to each. The Diaſtematic they conceived to 'be that which is ſung and reſts upon every note, and manifeſt the 'mutation which is in all its parts, which is inconfuſed and divided, 'and disjoined by the magnitudes, which are in the ſeveral ſounds as 'coacerved, but not commixt, the parts of the voice being applied 'mutually to one another, which may eaſily be ſeparated and diſtin-'guiſhed, and are not deſtroyed together; ſuch is the muſical kind of 'voice, which to the knowing manifeſts all ſounds of what magni-'tude every one participates: For if a man uſe it not after this 'manner, he is not ſaid to ſing but to ſpeak.†

'Human voice having in this manner two parts, they conceived 'that there are two places, which each in paſſing poſſeſſeth. The 'place of continuous voice, which is by nature infinite in magnitude, 'receiveth its proper term from that wherewith the ſpeaker began 'until he ends, that is the place from the beginning of his ſpeech to 'his concluſive ſilence. So that the variety thereof is in our power, 'but the place of diaſtematic voice is not in our power, but natural; 'and this likewiſe is bound by different effects. The beginning is 'that which is firſt heard, the end that which is laſt pronounced; 'for from thence we begin to perceive the magnitudes of ſounds, and 'their mutual commutations, from whence firſt our hearing ſeems

* Hiſt. of Philoſ. by Thomas Stanley, Eſq. folio edit. 1701, pag. 385.
† Ibid.

'to operate; whereas it is poſſible there may be ſome more obſcure 'ſounds perfected in nature which we cannot perceive or hear: as 'for inſtance, in things weighed there are ſome bodies which ſeem 'to have no weight, as ſtraws, bran, and the like; but when as by 'appoſition of ſuch bodies ſome beginning of ponderoſity appears, 'then we ſay they firſt come within the compaſs of ſtatic. So when 'a low ſound increaſeth by degrees, that which firſt of all may be 'perceived by the ear, we make the beginning of the place which 'muſical voice requireth.'*

Theſe were the ſentiments of the Pythagoreans, with reſpect to muſic in general, and of voice in particular. Farther, they maintained an opinion which numbers, eſpecially the poets, have adopted, and which ſeems to prevail even at this day, namely, that muſic, and that of a kind far ſurpaſſing mortal conception, is produced by the motion of the ſpheres in their ſeveral orbits. The ſum of this doctrine is comprized in the following account collected by Stanley from Nicomachus, Macrobius, Pliny, and Porphyry.

'The names of ſounds in all probability were derived from the 'ſeven ſtars, which move circularly in the heavens and compaſs the 'earth. The circumagitation of theſe bodies muſt of neceſſity 'cauſe a ſound; for air being ſtruck, from the intervention of the 'blow ſends forth a noiſe. Nature herſelf conſtraining that the vio-'lent colliſion of two bodies ſhould end in ſound."

'Now, ſay the Pythagoreans, all bodies which are carried round 'with noiſe, one yielding and gently receding to the other, muſt ne-'ceſſarily cauſe ſounds different from each other, in the magnitude and 'ſwiftneſs of voice and in place, which (according to the reaſon of 'their proper ſounds, or their ſwiftneſs, or the orbs of repreſſions, 'in which the impetuous tranſportation of each is performed) are 'either more fluctuating, or, on the contrary, more reluctant. But 'theſe three differences of magnitude, celerity, and local diſtance, 'are manifeſtly exiſtent in the planets, which are conſtantly with 'ſound circumagitated through the ætherial diffuſion; whence every 'one is called ἀϛὴρ, as void of στάσις, ſtation, and ἀεὶ θεῶν, always in 'courſe, whence God and Æther are called Θεὸς and Αἰθὴρ.'†

'Moreover the ſound which is made by ſtriking the air, induceth 'into the ear ſomething ſweet and muſical, or harſh and diſcordant:

* Ibid. † Ibid. 386.

'for

'. for if a certain obſervation of numbers moderate the blow, it effects
' a harmony conſonant to itſelf; but if it be temerarious, not go-
' verned by meaſures, there proceeds a troubled unpleaſant noiſe,
' which offends the ear. Now in heaven nothing is produced ca-
' ſually, nothing temerarious; but all things there proceed according
' to divine rules and ſettled proportions: whence irrefragably is in-
' ferred, that the ſounds which proceed from the converſion of the ce-
' leſtial ſpheres are muſical. For ſound neceſſarily proceeds from
' motion, and the proportion which is in all divine things cauſeth the
' harmony of this ſound. This Pythagoras, firſt of all the Greeks,
' conceived in his mind; and underſtood that the ſpheres ſounded
' ſomething concordant, becauſe of the neceſſity of proportion, which
' never forſakes celeſtial beings.'*

' From the motion of Saturn, which is the higheſt and fartheſt
' from us, the graveſt ſound in the diapaſon concord is called Hypate,
' becauſe ὕπατον ſignifieth higheſt; but from the lunary, which
' is the loweſt, and neareſt the earth, Neate; for νεατον ſignifieth
' loweſt. From thoſe which are next theſe, viz. from the motion of
' Jupiter who is under Saturn, Parypate; and of Venus, who is
' above the moon, Paraneate. Again, from the middle, which is
' the ſun's motion, the fourth from each part Meſe, which is diſtant
' by a diateſſaron, in the heptachord from both extremes, according
' to the ancient way; as the ſun is the fourth from each extreme of
' the ſeven planets, being in the midſt. Again, from thoſe which
' are neareſt the ſun on each ſide from Mars, who is placed betwixt
' Jupiter and the ſun, Hypermeſe, which is likewiſe termed Licha-
' nus; and from Mercury, who is placed betwixt Venus and the ſun,
' Parameſe.'†

' Pythagoras, by muſical proportion, calleth that a tone, by how
' much the moon is diſtant from the earth: from the moon to Mer-
' cury the half of that ſpace, and from Mercury to Venus almoſt as
' much; from Venus to the ſun, ſeſquiple; from the ſun to Mars, a
' tone, that is as far as the moon is from the earth: from Mars to
' Jupiter, half, and from Jupiter to Saturn, half, and thence to the
' zodiac ſeſquiple. Thus there are made ſeven tones, which they
' call a diapaſon harmony, that is an univerſal concent, in which

* Ibid. † Ibid.

'Saturn moves in the Doric mood, Jupiter in the Phrygian, and in 'the reſt the like.'*

'Thoſe ſounds which the ſeven planets, and the ſphere of fixed ſtars, 'and that which is above us, termed by them Antichton, make, 'Pythagoras affirmed to be the nine Muſes; but the compoſition 'and ſymphony, and as it were connexion of them all, whereof, as 'being eternal and unbegotten, each is a part and portion, he 'named Mnemoſyne.'†

That the above notion of the muſic of the ſpheres was firſt entertained by Pythagoras ſeems to be agreed by moſt writers. The reception it has met with has been different, according as the temper of the times, or the different opinions of men have contributed to favour or explode it. Cicero mentions it in ſuch a way as ſhews him inclined to adopt it, as does alſo Boetius, lib. I. cap. ii. Macrobius, in his Commentary on the Somnium Scipionis, lib. II. cap. iii. ſpeaks of it as a divine and heavenly notion. Valeſius, on the contrary, treats it as an ill-grounded conceit. Sacr. Philoſoph. cap. xxvi. &c. pag. 446. edit. 1588. Notwithſtanding which it has ever been favoured by the poets: Milton, who was a great admirer of muſic, while at college compoſed and red in the public ſchool, a ſmall tract De Sphærarum Concentu, which with a tranſlation thereof is publiſhed in Peck's Memoirs of him. Mr. Fenton, in his notes on Waller, ſuggeſts that Pythagoras might poſſibly have grounded his opinion of the muſic of the ſpheres upon a paſſage in the book of Job, the reaſons for this conjecture are very ingenious, and will be beſt given in his own words, which are theſe:

'Pythagoras was the firſt that advanced this doctrine of the muſic 'of the ſpheres, which he probably grounded on that text in Job, 'underſtood literally, "When the morning ſtars ſang together," '&c. chap. xxix. ver. 7. For ſince he ſtudied twelve years in 'Babylon, under the direction of the learned impoſtor Zoroaſtres, 'who is allowed to have been a ſervant to one of the prophets, we 'may reaſonably conclude that he was converſant in the Jewiſh writ-'ings, of which the book of Job was ever eſteemed of moſt authen-'tic antiquity. Jamblicus ingenuouſly confeſſeth that none but 'Pythagoras ever perceived this celeſtial harmony; and as it ſeems 'to be a native of imagination, the poets have appropriated it to 'their

* Ibid. 386. † Ibid.

'their own province, and our admirable Milton employs it very 'happily in the fifth book of his Paradiſe Loſt:

That day, as other ſolemn days, they ſpent
In ſong and dance about the ſacred hill;
Myſtical dance! which yonder ſtarry ſphere
Of planets and of fixt in all her wheels
Reſembles neareſt, mazes intricate,
Excentric, intervolv'd, yet regular
Then moſt, when moſt irregular they ſeem;
And in their motions harmony divine
So ſmooths her charming tones, that God's own ear
Liſtens delighted——— *

Cenſorinus ſuggeſts a notable reaſon why this heavenly muſic is inaudible to mortal ears, viz. its loudneſs, which he ſays is ſo great as to cauſe deafneſs. De Die Natal. cap. xi. which Butler has thus ridiculed.

Her voice, the muſic of the ſpheres,
So loud it deafens mortal ears,
As wiſe philoſophers have thought,
And that's the cauſe we hear it not.
HUDIBRAS, Part II. Cant. i. line 617.

After all, whether the above opinion be philoſophically true or not, the conception is undoubtedly very noble and poetical, and as ſuch it appears in the paſſage above-cited from the Paradiſe Loſt, and in this other of Milton, equally beautiful and ſublime.

Ring out, ye chryſtal ſpheres,
Once bleſs our human ears,
If ye have power to touch our ſenſes ſo;

* One of the earlieſt editors of Milton has the following note on this paſſage, which Dr. Newton has retained.

'There is a text in Job xxxviii. 37. that ſeems to favour the opinion of the Pythagoreans, 'concerning the muſical motion of the ſpheres, though our tranſlation differs therein from 'other verſions. "Concentum cæli quis dormire faciet?" Who ſhall lay aſleep, or ſtill 'the concert of the heaven? But this is to be underſtood metaphorically of the wonderful 'proportions obſerved by the heavenly bodies in their various motions.' HUME.

The above is the vulgate tranſlation; that of Beza is leſs to this purpoſe, as is alſo that of Tremelius.

And

And let your ſilver chime
Move in melodious time,
And let the baſe of heav'n's deep organ blow.
HYMN on the NATIVITY.

Touching the diviſion of the diapaſon, the following is the doctrine of the Pythagoreans.

'The diatonic genus ſeems naturally to have theſe degrees and 'progreſſes, hemitone, tone and tone, (half note, whole note and 'whole note); this is the ſyſtem diateſſaron, conſiſting of two tones, 'and that which is called a hemitone; and then, another tone being 'inſerted, diapente is made, being a ſyſtem of three tones and a he-'mitone. Then in order after this, there being another hemitone, 'tone and tone, they make another diateſſaron, that is to ſay, another 'Seſquitertia: ſo that in the ancienter heptachord, all fourths from 'the loweſt, ſound a diateſſaron one to another, the hemitone taking 'the firſt, ſecond, and third place, according to the progreſſion in 'the tetrachord. But in the Pythagoric octochord, which is by a 'conjunction a ſyſtem of the tetrachord and the pentachord, and 'that either jointly of two tetrachords, or disjointly of two tetra-'chords ſeparated from one another by a tone, the proceſſion will 'begin from the loweſt, ſo that every fifth ſound will make diapente, 'the hemitone paſſing into four places, the firſt, the ſecond, the 'third, and the fourth.'*

It appears alſo that Pythagoras inſtituted the canon of the Monochord, and proceeded to a ſubdiviſion of the diateſſaron and diapente into tones and ſemitones, and thereby laid the foundation for the famous Sectio Canonis, which Euclid afterwards adjuſted, and is given in his Introduction, as alſo in a foregoing chapter of this work. Duris, an author cited by Porphyry, mentions a brazen tablet, ſet up in the Temple of Juno by Arimneſtus the ſon of Pythagoras, near two cubits in diameter, on which was engraven a muſical canon, which was afterwards taken away by Simon, a Thracian, who arrogated the canon to himſelf, and publiſhed it as his own.†

Stanley ſpeaks farther of Pythagoras in theſe words: 'Pythagoras, 'ſaith Cenſorinus, aſſerted that this whole world is made according 'to muſical proportion, and that the ſeven planets betwixt heaven

* Stanl. Hiſt. of Philoſ. pag. 387. † Ibid. 388. 366.

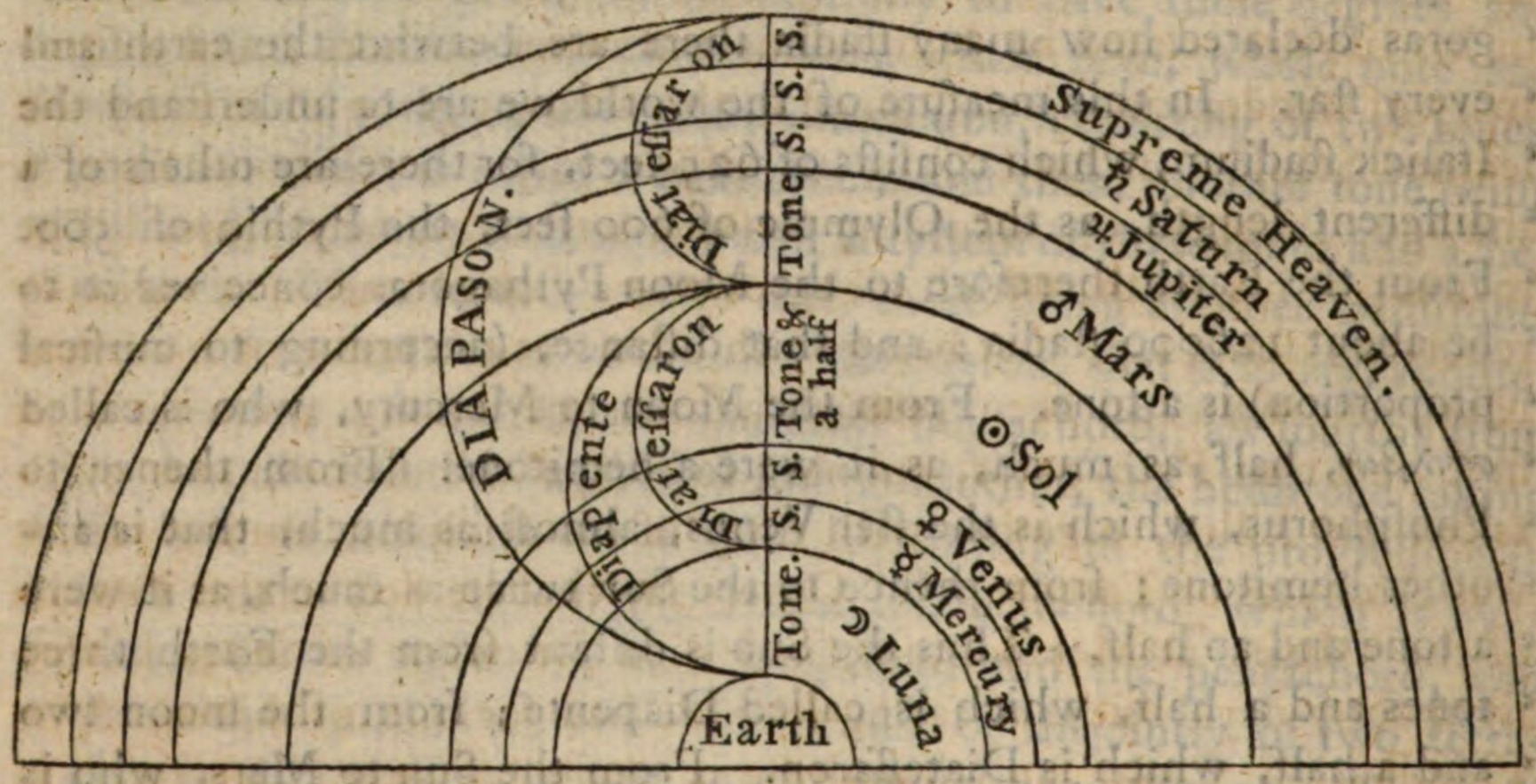
'and

'and the earth, which govern the nativities of mortals, have an harmonious motion, and intervals correſpondent to muſical diaſtemes; and render various ſounds, according to their ſeveral heights, ſo conſonant that they make moſt ſweet melody; but to us inaudible, by reaſon of the greatneſs of the noiſe, which the narrow paſſage of our ears is not capable to receive. For, as Eratoſthenes collected that the largeſt circumference of the earth is 252000 ſtadia, ſo Pythagoras declared how many ſtadia there are betwixt the earth and every ſtar. In this meaſure of the world we are to underſtand the Italick ſtadium, which conſiſts of 625 feet, for there are others of a different length, as the Olympic of 600 feet, the Pythic of 500. From the Earth therefore to the Moon Pythagoras conceived it to be about 126000 ſtadia; and that diſtance, (according to muſical proportion) is a tone. From the Moon to Mercury, who is called στιλβων, half as much, as it were a hemitone. From thence to Phoſphorus, which is the ſtar Venus, almoſt as much, that is another hemitone: from thence to the Sun twice as much, as it were a tone and an half. Thus the Sun is diſtant from the Earth three tones and a half, which is called Diapente; from the moon two and a half, which is Diateſſaron. From the Sun to Mars, who is called Πυρόεις, there is the ſame interval as from the Earth to the Moon, which makes a tone. From thence to Jupiter, who is called Φαεθων, half as much, which makes a hemitone. From thence to the ſupreme heaven, where the ſigns are a hemitone alſo; ſo that the diaſteme from the ſupreme heaven to the Sun is Diateſſaron, that is two tones and a half: from the ſupreme heaven to the top of the earth ſix tones, a diapaſon concord. Moreover he referred to other ſtars many things which the maſters of muſic treat of, and ſhewed that all this world is enarmonic *. Thus Cenſorinus:

* Theſe poſitions of the Pythagoreans, that the univerſe is framed according to muſical proportion, and that all this world is enarmonic, refer to the general frame and contexture of the whole. But there are arguments in favour of muſic, deducible from the properties and affections of matter, diſcoverable in its ſeveral parts: in ſhort, it may be ſaid in other words, that the whole world is in tune, inaſmuch as there are few bodies but are ſonorous. The ſkin of an animal may be tuned to any given note, as is obſervable in the drum: a cable diſtended by a ſufficient power is as much a muſical chord as a lute ſtring or one of wire. And Strada ſomewhere mentions ſix great guns in a fortification at Groningen, which from the ſounds uttered by them in their exploſion, had the names of UT, RE, MI, FA, SOL, LA. The percuſſion of all metals, of ſtones, nay of timber, or of the trunks of trees when felled, produces a muſical ſound: hollow veſſels, as well of wood, as earth and metal, when ſtruck do the ſame. Of this fact the Indian Gong, as it is called, is a ſur-

'but Pliny, delivering his opinion of Pythagoras, reckons ſeven 'tones from the earth to the ſupreme heaven; for whereas Cenſorinus 'accounts but a hemitone from Saturn to the zodiac, Pliny makes it 'Seſquiple.'*

Stanley repreſents the intervals of the ſpheres in the following diagram.



a ſurprizing inſtance; it is an inſtrument of braſs, or ſome other factitious metal, in form like a ſieve, and about two feet in diameter. The late duke of Argyle had one in his obſervatory at Whitton near Twickenham in Middleſex, which being ſuſpended edgewiſe by a cord, and ſtruck with a ſtick muffled at the end, many times, till the quickeſt vibrations it could make were excited, yielded not only a clear muſical ſound, but the whole harmony of a diapaſon, namely, the uniſon third, fifth, and octave, ſo clearly and diſtinctly, that each was obvious to the ear. This inſtrument is mentioned by Capt. Dampier in one of his voyages, and is thus deſcribed by him.

'In the ſultan's moſque [at Mindanao] there is a great drum with but one head, called 'a Gong, which is inſtead of a clock. This gong is beaten at twelve o'clock, at three, 'ſix, and nine, a man being appointed for that ſervice. He has a ſtick as big as a man's 'arm, with a great knob at the end bigger than a man's fiſt, made with cotton, bound 'faſt with ſmall cords; with this he ſtrikes the gong as hard as he can about twenty 'ſtrokes, beginning to ſtrike leiſurely the firſt five or ſix ſtrokes, then he ſtrikes faſter, 'and at laſt ſtrikes as faſt as he can; and then he ſtrikes again flower and flower ſo many 'ſtrokes: thus he riſes and falls three times a-day, and then leaves off till three hours 'after.' Dampier's Voyages, vol. I. pag. 388.

Glaſs, and many other bodies, affected by the voice, or the vibrations of chords, return the ſounds that agitate them. It is credibly reported of old Smith the organ-maker, that he could not tune a pipe in St. Paul's organ till he had broke a pane of glaſs in the ſaſh that incloſes it.

* Stanl. Life of Pythag. pag. 393.

CHAP. IV.

IN what manner Pythagoras diſcovered the conſonances, and adjuſted the ſyſtem, has already been mentioned. The particulars of his life are related by Jamblichus and other authors; and a ſummary of his doctrines is contained in the account given of him by the learned Stanley, in his Hiſtory of Philoſophy. Pythagoras lived to the age of eighty, or, according to ſome writers, ninety years. The manner of his death, which all agree was a violent one, is as variouſly reported; ſome ſay, that being with others at the houſe of his friend Milo, one who had been refuſed admittance among them ſet it on fire, and that Pythagoras, running to eſcape the flames, was overtaken and killed, together with forty of his diſciples, among whom was Archytas of Tarentum*. Others ſay that he fled to the Temple of the Muſes at Metapontum, and died for want of food, having lived forty days without eating†. He had for one of his diſciples Philolaus, a Crotonian (though he is claſſed among thoſe of Tarentum, his followers) whoſe ſyſtem of a ſeptenary is hereinbefore inſerted; and who was alſo the inventor of that diviſion of the ſeſquioctave tone into commas, which Boetius has recognized, and is approved of even at this day. This Philolaus is ſaid to have been the firſt that aſſerted the circular motion of the earth, and to have written of the doctrines of the Pythagorean ſchool. One of his books was purchaſed by Plato of his relations, at forty Alexandrian Minæ, an immenſe price ‡.

Among many tenets of the Pythagoreans, one was that there is a general and univerſal concent or harmony in the parts of the univerſe, and that the principles of muſic pervade the whole material world; for which reaſon they ſay that the whole world is enarmonic. And in the compariſon they aſſert that thoſe proportions into which the conſonances in muſic are reſolvable, are alſo to be found in thoſe material forms, which from the ſymmetry of their parts excite pleaſure

* Stanley in the Life of Pythagoras, chap. xix.
† Ibid.
‡ Ibid. pag. 436.

in the beholder. The effect of this principle is in nothing ſo diſcoverable as in the works of the architects of ancient times, in which the proportions of 2 to 1, anſwering to the diapaſon; of 3 to 2, or Seſquialtera, 4 to 3, or Seſquitertia, are perpetually reſulting from a compariſon between the longitude and latitude of the whole or conſtituent parts, ſuch as porticos, pediments, halls, veſtibules, and apertures of all kinds, of every regular edifice.

At a time when philoſophy had derived very little aſſiſtance from experiment, ſuch general concluſions as theſe, and that the univerſe was founded on harmonic principles, had little to recommend them but the bare probability that they might be well grounded; but how great muſt have been the aſtoniſhment of a Pythagorean or a Platoniſt, could he have been a witneſs to thoſe improvements which a more cultivated philoſophy has produced! And how would he who exulted in the diſcovery that the conſonances had a ratio of 12. 9. 8. 6, have been pleaſed to hear the conſonances at the ſame inſtant in a ſonorous body; or been tranſported to find, by the help of a priſm, a ſimilar coincidence of proportions among colours, and that the principles of harmony pervaded as well the objects of ſight as hearing? For Sir Iſaac Newton happily diſcovered, that the breadths of the ſeven primary colours in the ſun's image, produced by the refraction of his rays through a priſm, are proportional to the ſeven differences of the lengths of the eight muſical ſtrings, D, E, F, G, A, B, C, d, when the intervals of their ſounds are T, H, t; T, t, H, T. *

The earlieſt of the harmonic writers, whoſe works are now extant, was ARISTOXENUS; he was the ſon of a muſician of Tarentum in Italy, called alſo Spintharus. Ariſtoxenus ſtudied muſic firſt under his father at Mantinea, and made a conſiderable proficiency therein: he had alſo diverſe other tutors, namely, Lamprius, Erythræus, Xenophilus the Pythagorean, and laſtly Ariſtotle, whom, as ſome ſay, he greatly reviled after his death, for having left his ſchool to Theophraſtus, which Ariſtoxenus expected to have had, he being greatly applauded by his hearers: though others on the contrary aſſert, that he always mentioned Ariſtotle with great reſpect. He lived in the time of Alexander the Great, viz. about the hundred and eleventh Olympiad,

* Vide Smith's Harmonics, pag. 31, in a note. And Sir Iſaac Newton's Optics, book I. part ii. prop. 3, pag. 91 of the quarto edition.

which

which anſwers nearly to A. M. 3610. There are extant of his writing Elements of Harmonics, in three books. He is ſaid to have written on muſic, philoſophy, hiſtory, and other branches of learning, books to the number of four hundred and fifty-three, and to have expreſsly treated on the other parts of muſic, namely, the Rythmic, the Metric, and the Organic; but that abovementioned is the only work of his now remaining.

Touching the elements of Ariſtoxenus, there is great diverſity of opinions: Cicero, who, as being a philoſopher, we may ſuppoſe to have ſtudied the work with ſome degree of attention, in his Treatiſe de Finibus, lib. V. 19. pronounces of it that it is utterly unintelligible. Meibomius, on the other hand, ſpeaks of it as a moſt valuable relique of antiquity, and ſcruples not to ſtyle the author the Prince of Muſicians. And the principal end of Euclid's Introduction is to reduce the principles of the Ariſtoxeneans into form. Notwithſtanding all this, a very learned writer, namely, Sir Francis Stiles, of whom mention has already been made, heſitates not to ſay, that the whole three books of harmonics aſcribed to Ariſtoxenus are ſpurious. On what authority this aſſertion is grounded he has forborne to mention; however, as the work is recognized by Ptolemy, and is conſtantly appealed to by him, as the teſt of the Ariſtoxenean doctrine, its authenticity will at this day hardly bear a queſtion.

In the firſt book of the Elements of Harmonics of Ariſtoxenus, is contained that explanation of the genera, and alſo of their colours or ſpecies, which has already been given from him. The reſt of that book conſiſts of ſome general definitions of terms, particularly thoſe of Sound, Interval, and Syſtem, which, though in ſome reſpects arbitrary, all the ſubſequent writers ſeem to have acquieſced in.

In his ſecond book we meet with an aſſertion of the author, which at this day muſt doubtleſs appear unintelligible, namely, that muſic has a tendency to improve or corrupt the morals. This notion, ſtrange as it may ſeem, runs through the writings of all the ancient philoſophers, as well thoſe who did not, as thoſe that did, profeſs to teach muſic. Plutarch inſiſts very largely on it; and it is well known what effects the Spartans attributed to it, when they made it an eſſential in the inſtitution of their youth. Ariſtophanes, in his comedy of The Clouds, puts into the mouth of Juſtice, whom he repreſents as engaged in a conteſt with Injuſtice, a ſpeech ſo very pertinent

tinent to this ſubject, that it is here inſerted at length, as Mr. Theobald has tranſlated it. 'I'll tell you then what was the diſcipline of 'old, whilſt I flouriſhed, had liberty to preach up temperance to mankind, and was ſupported in it by the laws; then it was not permitted for the youth to ſpeech it in public, but every morning the 'young people of each borough went to their muſic ſchool, marched 'with a grave compoſed countenance through the ſtreets, decent 'and lightly clothed, even when the ſnow fell thick. Before their 'maſter they ſat with modeſty, in proper ranks, at diſtance from 'each other; there they were taught to ſing in lofty ſtrains ſome 'hymn to the great and formidable Pallas, or other canto of that 'kind, in concert with the ſtrong and maſculine muſic of their 'country, without pretending to alter the tones that had been derived down to them by their forefathers. And if any one were obſerved to wanton it in his performance, and ſing in an effeminate 'key, like thoſe that now ſing your corrupted airs of Phrynis, he 'was immediately chaſtiſed as one that depraved and ruined muſic. 'You would not then have ſeen a ſingle inſtance of one that ſhould 'dare commit the leaſt immodeſty, or diſcover ought that honeſty 'enjoined him to hide: they were ſo ſcrupulouſly nice in this reſpect, that they never forgot to ſweep up the ſand on which they 'had ſat. None then aſſumed the lawleſs minion, or defiled himſelf 'with wanton glances; none were ſuffered to eat what was an incentive to luxury, or injured modeſty: radiſhes were baniſhed from 'their meals; the aniſe and rock-parſley, that are proper for old 'conſtitutions, were forbid them, and they were ſtrangers to high 'and ſeaſoned diſhes: they ſat with gravity at table, never encouraged an indecent poſture, or the toſſing of their legs lazily up and 'down *.'

* Polybius in his fourth book, chap. iii. has given a deſcription of the ancient Arcadian diſcipline of youth, nearly correſponding with that of the Spartans above cited, in a paſſage, which, as it is often alluded to by the writers on muſic, is here inſerted in the words of his elegant tranſlator Mr. Hampton.

'All men know that Arcadia is almoſt the only country in which children, even from 'their moſt tender age, are taught to ſing in meaſure the ſongs and hymns that are compoſed in honour of their gods and heroes: and that afterwards when they have learned 'the muſic of Timotheus and Philoxenus, they aſſemble once in every year in the public 'theatres, at the feaſt of Bacchus, and there dance with emulation to the ſound of flutes, 'and celebrate according to their proper age, the children thoſe that are called the puerile, 'and the young men the manly games. And even in their private feaſts and meetings 'they

It has already been ſaid that this philoſopher did by no means acquieſce in the opinion of Pythagoras and his followers, that the underſtanding is the ultimate judge of intervals; and that in every ſyſtem there muſt be found a mathematical coincidence before ſuch ſyſtem can be ſaid to be harmonical: this poſition Ariſtoxenus and all of his ſchool denied. The philoſopher himſelf, in this ſecond book of his Elements, expreſsly aſſerts, that 'by the hearing we judge of the magnitude of an interval, and by the underſtanding we conſider its ſeveral powers.' And again he ſays, 'that the nature of melody is beſt diſcovered by the perception of ſenſe, and is retained by memory; and that there is no other way of arriving at the knowledge of muſic;' and though, he ſays, 'others affirm that it is by the ſtudy of inſtruments that we attain this knowledge;' this, he ſays, is talking wildly, 'for that as it is not neceſſary for him who writes an Iambic to attend to the arithmetical proportions of the feet of which it is compoſed, ſo it is not neceſſary for him who writes a Phrygian Cantus to attend to the ratios of the ſounds proper thereto.' The meaning of this paſſage is very obvious, and may be farther illuſtrated by a compariſon of muſic with painting, the practice whereof is ſo little connected with the theory of the art, that it requires not the leaſt ſkill in the former to make a painter. The laws of viſion, or the theory of light and colours never ſuggeſt themſelves to him who is about to deſign a picture, whether it be hiſtory, landſcape, or portrait: the common places in his mind are ideas of effect and harmony, drawn ſolely from experience and obſervation; and in like manner the muſical compoſer adverts to thoſe harmonies or melodies, thoſe combinations, which from their effect alone he has found to be the moſt grateful, without recurring to the ratios that ſubſiſt among them.

Ariſtoxenus then proceeds to a general diviſion of muſic into ſeven parts, which he makes to be 1. The Genera. 2. Intervals. 3.

'they are never known to employ any hired bands of muſic for their entertainment, but each man is himſelf obliged to ſing in turn. For though they may without ſhame or cenſure diſown all knowledge of every other ſcience, they dare not, on the other hand, diſſemble or deny that they are ſkilled in muſic, ſince the laws require that every one ſhould be inſtructed in it: nor can they, on the other hand, refuſe to give ſome proofs of their ſkill when aſked, becauſe ſuch refuſal would be eſteemed diſhonourable. They are taught alſo to perform in order all the military ſteps and motions to the ſound of inſtruments; and this is likewiſe practiſed every year in the theatres, at the public charge, and in ſight of all the citizens.' Hampton's Polybius, pag. 359.

Sounds.

Sounds. 4. Syſtems. 5. Tones or Modes. 6. Mutations. And 7. Melopœia; and in this method he is followed by Ariſtides, Nicomachus, and moſt other ancient writers.

The remainder of the abovementioned work, the Elements of Ariſtoxenus, is taken up with a diſcuſſion of the ſeveral parts of muſic according to the order which he had preſcribed to himſelf. But it muſt be owned ſo great is the obſcurity in which his doctrines are involved, that very little inſtruction is to be obtained from the moſt attentive peruſal of him; nor will the truth of this aſſertion be queſtioned, when the reader is told that Cicero himſelf has pronounced his work unintelligible *. The uſe, however, propoſed to be made of it is occaſionally to refer to ſuch parts of it as are leaſt liable to this cenſure, and this will be done as often as it ſhall appear neceſſary.

The next in order of time of the writers on muſic is Euclid, the author of the Elements of Geometry. He lived about the year of the world 3617, and wrote an Introduction to Harmonics, which he begins with ſome neceſſary definitions, particularly of the words Acumen and Gravitas, terms that frequently occur in the writings of the ancient harmonicians: the firſt of theſe he makes to be the effect of intenſion or raiſing, and the other of remiſſion or falling the voice. He then proceeds to treat of the genera and the modes; what he has ſaid of each is herein beforementioned. His Iſagoge or Introduction is a very ſmall tract, and little remains to be ſaid of it, except that it contains the famous Sectio Canonis, a geometrical diviſion of a chord for the purpoſe of aſcertaining the ratios of the conſonances, hereinbefore inſerted. In this, and alſo in his opinion touching the diateſſaron and diapente, namely, that the former is leſs than two tones and a hemitone, and the latter leſs than three tones and a hemitone he is a Pythagorean, but in other reſpects he is apparently a follower of Ariſtoxenus †. The fundamental principle of Euclid's preliminary diſcourſe to the Sectio Canonis is, that every concord ariſes either from a multiple or ſuperparticular ratio; the other neceſſary premiſes are, 1. That a multiple ratio twice compounded, that is multiplied by two, makes the total a multiple ratio. 2. That if any ratio twice compounded makes the total multiple., that ratio is itſelf multiple. 3. A ſuper-

* De Finibus, lib. V. 19.
† Wallis. Append. de Vet. Harm. pag. 307.

particu-

particular ratio admits of neither one nor more geometrical mean proportionals. 4. From the ſecond and third propoſitions it follows, that a ratio not multiple, being twice compounded, the total is a ratio neither multiple nor ſuperparticular. Again, from the ſecond it follows that if any ratio twice compoſed make not a multiple ratio, itſelf is not multiple, 5. The multiple ratio, 2 to 1, which is that of the diapaſon, and is the leaſt of the kind and the moſt ſimple, is compoſed of the two greateſt ſuperparticular ratios 3 to 2, and 4 to 3, and cannot be compoſed of any other two that are ſuperparticular*.

The foregoing account of the nature and deſign of Euclid's diviſion is contained in a ſeries of theorems prefixed to the Sectio Canonis, and are reduced to a kind of ſummary by Malcolm, who appears to have been extremely well verſed in the mathematical part of muſic.

It was not till the time of Meibomius that the world was poſſeſſed of a genuine and accurate edition of the Iſagoge of Euclid; it ſeems that a MS. copy of a Treatiſe on Harmonics in the Vatican had wrote in it 'Incerti Introductio Harmonica;' and that ſome perſon had written therein the name of Cleonidas, and ſome other, with as little reaſon, Pappus Alexandrinus. Of this MS. Georgius Valla, a phyſician of Placentia, publiſhed at Venice, in 1498, a Latin tranſlation, with the title of Cleonidæ Harmonicum Introductorium; which after all appears to be a brief compendium of Euclid, Ariſtides Quintilianus, and Manuel Bryennius, of very little worth: and as to Cleonidas, the reader is as much to ſeek for who he was, and where he lived, as he would have been had Valla never made the above tranſlation.

* Malcolm on Muſic, pag. 508.

The above terms were uſed by the old arithmetical writers before the invention of fractional arithmetic, ſince which they have in a great meaſure been laid aſide. What is to be underſtood by thoſe kinds of muſical proportion to which they are ſeverally applied, will hereafter be ſhewn; however it may here be neceſſary to give a ſhort explanation of the terms, and ſuch a one follows.

Multiple proportion is when the antecedent being divided by the conſequent, the quotient is more than unity; as 25 being divided by 5, it gives 5 for the quotient, which is the multiple proportion.

Superparticular proportion is when one number or quantity contains another once, and an aliquot part, whoſe radical or leaſt number is one; ſo that the number which is ſo contained in the greater, is ſaid to be to it in a ſuperparticular proportion.

To theſe may be added ſuperpartient proportion, which is when one number or quantity contains another once, and ſome number of aliquot parts remaining, as one $\frac{2}{3}$, one $\frac{3}{4}$, &c.

DIDYMUS of Alexandria, an author to be reckoned among the ſcriptores perditi, inaſmuch as nothing of his writing is now extant, muſt nevertheleſs be mentioned in this place: he flouriſhed about the year of the world 4000, and is ſaid to have firſt diſcovered and aſcertained the difference between the greater and leſſer tone. Ptolemy takes frequent occaſion to mention him, and has given his diviſion of the diateſſaron in each of the three genera.

CHAP. V.

MARCUS VITRUVIUS POLLIO, the architect, has uſually been ranked among the writers on muſic; not ſo much becauſe he appears to have been ſkilled in the art, but for thoſe chapters in his work De Architectura, in ten books, written in Latin, and dedicated to the emperor Auguſtus, in which he treats of it. He flouriſhed in the time of Julius Cæſar, to whom he ſays he became known by his ſkill in his profeſſion, which it is agreed was ſuperlatively great; though, to conſider him as a writer, it is remarked that his ſtyle is poor and vulgar. In ſome editions of his work, particularly that of Florence, 1496, and in another publiſhed at Venice the year after, by ſome unaccountable miſtake he is called Lucius, whereas his true name was Marcus, and ſo by common conſent he is called. In the fifth book of the abovementioned treatiſe, chap. iii. intitled De Theatro, he takes occaſion to treat of ſound, particularly that of the human voice, and of the methods practiſed by the ancients in the conſtruction of their theatres, to render it more audible and muſical: the various contrivances for this purpoſe will doubtleſs appear ſtrange to modern apprehenſion, and give an idea of a theatre very different from any that can be conceived without it. His words are as follow:

'The ancient architects having made very diligent reſearches into 'the nature of the voice, regulated the aſcending gradations of their 'theatres accordingly, and ſought, by mathematical canons and mu-'ſical ratios, how to render the voice from the ſtage more clear and 'grateful to the ears of the audience.' Chap. iv. harmony, he ſays, is a muſical literature, very obſcure and difficult to ſuch as underſtand not the Greek language; and, if we are deſirous to explain it,

we

we muſt neceſſarily uſe Greek words, ſome whereof have no Latin appellations; wherefore, ſays he, 'I ſhall explain it as clearly as I am able 'from the writings of Ariſtoxenus, whoſe diagram I ſhall give, and ſhall 'define the ſounds ſo as that whoever diligently attends may eaſily 'conceive them.' He then proceeds, 'For the changes of the voices, 'ſome are acute and others grave. The genera of modulations are 'three; the firſt, named in Greek Harmonica, the ſecond Chroma, 'the third Diatonon; the harmonic genus is grave and ſolemn in its 'effect; the chromatic has a greater degree of ſweetneſs, ariſing 'from the delicate quickneſs and frequency of its tranſitions; the 'diatonic, as it is the moſt natural, is the moſt eaſy.' He then proceeds to deſcribe the genera in a more particular manner. Chap. v. intitled De Theatri Vaſis, he ſpeaks of the methods of aſſiſting the voice in the manner following. 'Let veſſels of braſs be conſtructed 'agreeable to our mathematical reſearches, in proportion to the di-'menſions of the theatre, and in ſuch manner, that when they ſhall 'be touched they may emit ſuch ſounds as ſhall be to each other a 'diateſſaron, diapente, and ſo on in order, to a diſdiapaſon; and let 'theſe be diſpoſed among the ſeats, in cells made for that purpoſe, 'in a muſical ratio, ſo as not to touch any wall, having round them 'a vacant place, with a ſpace overhead. They muſt be placed in-'verſely: and, in the part that fronts the ſtage, have wedges put 'under them, at leaſt an half foot high; and let there be apertures 'left before theſe cells, oppoſite to the lower beds; theſe openings 'muſt be two feet long, and half a foot high, but in what places 'in particular they are to be fixed is thus explained. If the 'theatre be not very large, then let the places deſigned for the 'vaſes be marked quite acroſs, about half way up its height, 'and let thirteen cells be made therein, having twelve equal inter-'vals between them. In each of theſe, at the extremes or cor-'ners, let there be placed one vaſe, whoſe echo ſhall anſwer to 'Nete hyperboleon; then on each ſide next the corners place an-'other, anſwering to the diateſſaron of Nete ſynemmenon. In the 'third pair of cells, reckoning, as before, from the angles, place the 'diateſſaron of Nete parameſon; in the fourth pair that of Nete ſy-'nemmenon; in the fifth the diateſſaron of Meſe; in the ſixth the 'diateſſaron of Hypate meſon; and in the middle the diateſſaron of 'Hypate hypaton. In this ratio, the voice, which is ſent out from

'the ſtage as from a center, undulating over the whole, will ſtrike 'the cavities of every vaſe, and the concords agreeing with each of 'them, will thereby return clearer and increaſed; but if the ſize of 'the theatre be larger, then let its height be divided into four parts, 'and let there be made three rows of cells acroſs the whole, one 'whereof is deſigned for Harmonia, another for Chroma, and the 'other for Diatonos. In the firſt or lower row, which is for Har-'monia, let the vaſes be placed in the ſame manner as is above direct-'ed for the leſſer theatre; but in the middle row let thoſe be placed 'in the corners whoſe ſounds anſwer to the Chromaticon hyperbo-'leon; in the pair next to the corners the diateſſaron to the Chro-'maticon diezeugmenon; in the third the diateſſaron to the Chro-'maticon ſynemmenon; in the fourth the diateſſaron to the Chro-'maticon meſon; in the fifth the diateſſaron to the Chromaticon 'hypaton; and in the ſixth the diateſſaron to the Chromaticon Para-'meſon; for the Chromaticon hyperboleon diapente has an agree-'ment of conſonancy with the Chromaticon meſon diateſſaron. But 'in the middle cell nothing need be placed, by reaſon that in the 'chromatic genus of ſymphony no other quality of ſounds can have 'any concordance. As to the upper diviſion or row of cells, let 'vaſes be placed in the extreme corners thereof, which anſwer to the 'ſounds Diatonon hyperboleon; in the next pair to them the diateſ-'ſaron to Diatonon diezeugmenon; in the third the diateſſaron to 'Diatonon ſynemmenon; in the fourth the diateſſaron to Diatonon 'meſon; in the fifth the diateſſaron to Diatonon hypaton; in the 'ſixth the diateſſaron to Proſlambenomenon: the diapaſon to Dia-'tonon hypaton has an agreement of ſymphony with the diapente. 'But if any one would eaſily arrive at perfection in theſe things, let 'him carefully inſpect the diagram at the latter end of the book, 'which Ariſtoxenus compoſed with great care and skill, concerning 'the diviſions of modulations*, from which, if any one will attend to 'his reaſoning, he will the more readily be able to effect the con-'ſtructions of theatres according to the nature of the voice, and to 'the delight of the hearers.' Thus far Vitruvius.

We are too little acquainted with the nature of the ancient drama to be able to account particularly for the effects of this ſingular inven-

* This diagram is inſerted in Graſſineau's Dictionary, article GENERA.

tion: to ſuppoſe that in their theatrical repreſentations the actors barely pronounced their ſpeeches, accompanying their utterance with correſpondent geſticulations, and a proper emphaſis, as is practiſed in our times, would render it of no uſe; for the vaſes ſo particularly deſcribed and adjuſted by this author, are evidently calculated to reverberate, not the tones uſed in ordinary ſpeech, which have no muſical ratio, but ſounds abſolutely muſical: and, on the other hand, that the actor ſhould, inſtead of the leſſer inflexions of the voice proper to diſcourſe, make uſe of the conſonances diateſſaron, diapente, and diapaſon, and conſequently *ſing*, as well the familiar ſpeeches proper to comedy, as thoſe of the more ſublime and exalted kind which diſtinguiſh tragedy, is utterly impoſſible for us to conceive.

If it was for the purpoſe of reverberating the muſic uſed in the dramatic repreſentations of the ancient Romans, that this diſpoſition of hollow veſſels, directed by Vitruvius, was practiſed, we may fairly pronounce that the end was not worthy of the means; for however excellent the muſical theory of the ancients might be, yet in the number and perfection of their inſtruments they were greatly behind the moderns; and were it a queſtion, we need look no farther for a proof of the fact than the comedies of Terence, where we are told that the muſic performed at the acting of each of them was compoſed by Flaccus, a freed-man of Claudius; and that it was played in ſome inſtances, as at the Andria, tibiis paribus, dextris et ſiniſtris; and in others, tibiis paribus generally; and at the Phormio tibiis impa-ribus, that is to ſay, by flutes or pipes right-handed and left-handed, in pairs, or of unequal lengths. This was not at a time when the ancient muſic was in its infancy: the ſyſtem had been adjuſted many ages before; and we may look on this refinement mentioned by Vitruvius as the laſt that the art was thought capable of. It is not here meant to anticipate a compariſon, which will come more properly hereafter; but let any one take a view of the ancient muſic at the period above referred to, with even the advantage of this improvement drawn from the doctrine of Phonics, and compare it with that of modern times; let him reflect on the ſeveral improvements which diſtinguiſh the modern from the ancient muſic, ſuch as the multiplication of parts, the introduction of inſtruments, ſome to extend the compaſs of ſounds, others to encreaſe the variety of tones, and others more forcibly to impreſs the time and meaſure, as the drum and other

inſtru-

inſtruments of the pulſatile kind are manifeſtly calculated to do; the uſe of a greater and leſſer chorus; that enchanting kind of ſymphony, known only to the moderns, called thorough baſs; and thoſe very artful ſpecies of compoſition, fugue and canon. Let this compariſon be made, and the preference aſſigned to that æra which has the beſt claim to it.

Although this work of Vitruvius is profeſſedly written on the ſubject of architecture, it is of a very miſcellaneous nature, and treats of matters very little allied to that art, as namely, the conſtruction of the baliſta, the catapulta, and other warlike engines; clocks and dials, and the nature of colours. In chap. xi. lib. X. intitled De Hydraulicis, he undertakes to deſcribe an inſtrument called the hydraulic or water-organ, but ſo imperfectly has he deſcribed it, that to underſtand his meaning has given infinite trouble and vexation to many a learned enquirer *.

For the exiſtence of this ſtrange inſtrument we have not only the teſtimony of Vitruvius, but the following paſſage in Claudian, which cannot by any kind of conſtruction be referred to any other.

Vel qui magna levi detrudens murmura tactu,
Innumeras voces ſegetis modulatur ahenæ;
Intonat erranti digito, penituſque trabali
Vecte laborantes in carmina concitat undas.

It is ſaid by ſome that the hydraulic organ was invented by Hero of Alexandria; others aſſert that Cteſibus, about the year of the world 3782, invented an inſtrument that produced muſic by the compreſſion of water on the air; and that this inſtrument, which anſwers preciſely to the hydraulic organ, was improved by Archimedes and Vitruvius, the latter of whom has given a very particular deſcription of it.

Cteſibus the inventor of it was a native of Alexandria, and the ſon of a barber. He was endowed with an excellent genius for mechanic inventions, which he ſoon diſcovered in the contrivance of a looking-glaſs for his father's ſhop, ſo hung as that it might be

* Merſennus, ſpeaking of this machine, ſays it is much more complex than the common pneumatic organ, and that he has laboured to deſcribe a thing very obſcure, and the meaning of which he could not come at, though aſſiſted by the commentary of Daniel Barbaro. De Inſtrumentis Harmonicis, pag. 138. He farther ſays that Politian in his Panepiſtemon has in vain attempted to explain it.

eaſily pulled down or raiſed higher by means of a hidden rope. The manner of this invention is thus related by Vitruvius. He put a wooden tube under a beam where he had faſtened ſome pullies, over which a rope went that made an angle in aſcending and deſcending into the tube, which was hollow, ſo that a little leaden ball might run along it, which ball, in paſſing and repaſſing in this narrow cavity, by violent motion expelled the air that was incloſed, and forced it againſt that without; theſe oppoſitions and concuſſions made an audible and diſtinct ſound, ſomething like the voice. He therefore on this principle, invented engines which received motion from the force of water incloſed, and others that depended upon the power of the circle or lever; and many ingenious inventions, particularly clocks that move by water. To ſet theſe engines at work he bored a plate of gold or a precious ſtone, and choſe ſuch kind of materials, as not being ſubject to wear by conſtant paſſing of the water, or liable to contract filth and obſtruct its paſſage; this being done, the water, which ran through the ſmall hole, raiſed a piece of cork, or little ſhip inverted, which workmen call Tympanum, upon which was a rule and ſome wheels equally divided, whoſe teeth moving one another made theſe wheels turn very leiſurely. He alſo made other rules and wheels, divided after the ſame manner, which by one ſingle motion in turning round produced divers effects; made ſeveral ſmall images move round about pyramids, threw up ſtones like eggs, made trumpets ſound, and performed ſeveral other things not eſſential to clock-work. Vitruvius de Architectura, lib. IX. cap. viii.

But to return: The following is the deſcription given by Vitruvius of the hydraulic organ.

'Autem quas habeant ratiocinationes, quam breviſſimè proxime
'que attingere potero: et ſcriptura conſequi, non prætermittam. De
'materia compacta baſi area in ea ex ære fabricata collocatur.
'Supra baſin eriguntur regulæ dextra ac ſiniſtra ſcalari forma com-
'pactæ: quibus includuntur ærei modioli fundulis ambulationibus
'ex torno ſubtiliter ſubactis habentibus infixos in media ferreos an-
'gones; et verticulis cum vectibus conjunctos pellibuſque lanatis in-
'volutos. Item in ſumma planitie foramina circiter digitorum ter-
'num, quibus foraminibus proximè in verticulis collocati ærei del-
'phini, pendentia habent catenis cymbalia ex ore infra foramina mo-
'diorum celata. Intra aream: quo loci aqua ſuſtinetur in eſt in id

genus

‘ genus uti infundibulum inverſum: quem ſuper traxilli alti circiter
‘ digitorum ternum ſuppoſiti librant ſpacium imum. Ima inter labra
‘ phigæos et aræ fundum. Supra autem cerviculum ejus coagmenta
‘ arcula ſuſtinet caput machinæ quæ Grecè Canon Muſicus appella-
‘ tur: in cujus longitudine ſi canalis tetrachordos eſt fiunt quatuor.
‘ Si exachordos ſex. Si octochordos octo. Singulis autem cana-
‘ libus ſingula epithonia ſunt incluſa manubriis ferreis collocata.
‘ Quæ manubria cum torquentur ex arca patefaciunt nares in canales.
‘ Ex canalibus autem canon habet ordinata in tranſverſo foramina
‘ reſpondentia in naribus: quæ ſunt in tabula ſumma: quæ tabula
‘ Græcè Pinas dicitur. Inter tabulam et canona regulæ ſunt interpo-
‘ ſitæ ad eundem modum foratæ ex oleo ſubactæ: ut facilitur impel-
‘ lantur: et rurſus introrſus reducantur: quæ obturant ea foramina:
‘ plinthideſque appellantur. Quarum itus et reditus alias obturat:
‘ alias operit terebrationes. Hæ regulæ habent ferrea choragia fixa
‘ et juncta cum pinnis quarum tactus motiones efficit. Regularum
‘ continentur ſupra tabulam foramina quæ ex canalibus habent egreſ-
‘ ſum ſpiritus ſunt annuli agglutinati: quibus lingulæ omnium in-
‘ cluduntur organorum. E modiolis autem fiſtulæ ſunt continentes
‘ conjunctæ ligneis cervicibus: pertinenteſque ad nares: quæ ſunt in
‘ arcula: in quibus axes ſunt ex torno ſubacti: et ibi collocati. Qui
‘ cum recipit arcula animam ſpiritum non patientur obturantes fora-
‘ mina rurſus redire. Ita cum vectes extolluntur ancones educunt
‘ fundos modiolorum ad imum. Delphinique qui ſunt in verticulis
‘ incluſi calcantes in eos cymbala replent ſpatia modiolorum: at-
‘ que ancones extollentes fundos intra modiolos vehementi pulſus ce-
‘ rebritate: et obturantes foramina cymbalis ſuperiora. Aera qui
‘ eſt ibi clauſus preſſionibus coactum in fiſtulas cogunt: per quas in
‘ ligna concurrit: et per ejus cervices in arcam. Motione vero vec-
‘ tium vehementiores ſpiritus frequens compreſſus epithoniorum
‘ aperturis ifluit, et replet animæ canales itaque cum pinæ manibus
‘ tactæ propellunt et reducunt continenter regulas alterius obturant
‘ foramina alterius aperiendo ex muſicis artibus multiplicibus modu-
‘ lorum varietatibus ſonantes excitant voces *. Quantum potui niti,
‘ ut obſcura res, per ſcripturam diludicè pronunciaretur; contendi.
‘ Sed hæc non eſt facilis ratio: neque omnibus expedita ad intelli-

* Vitruvius de Architectura, lib. X. cap. xi. Ibid. cap. xii.

‘ gendum

'gendum præter eos, qui in his generibus habent exercitationem. 'Quod ſi qui parum intellexerint e ſcriptis cum ipſam rem cognoſ-'cent: profectò invenient curioſe et ſubtiliter omnia ordinata.'*

This deſcription, which to every modern reader muſt appear unintelligible, Kircher has not only undertaken to explain, but the ſtrength of his imagination co-operating with his love of antiquity, and his deſire to inform the world, he has exhibited in the Muſurgia an inſtrument which no one can contemplate ſeriouſly: and, after all, he leaves it a queſtion whether it was an automaton, acted upon by that air, which by the pumping of water was forced through the ſeveral pipes, or whether the hand of a ſkilful muſician, ſitting at the front of it, with the quantity of ſome tons of water in a reſervoir under him, was not neceſſary to produce that muſic which the bigotted admirers of antiquity aſcribe to this inſtrument, and affect to be ſo fond of. Iſaac Voſſius, in his treatiſe De Poematum Cantu et Viribus Rythmi, pag. 100, has given a repreſentation of the hydraulic organ, no way reſembling that of Kircher, but which he yet ſays is almoſt exactly conformable to the words of Vitruvius; after which follows a deſcription thereof in words not leſs obſcure than thoſe of Vitruvius and Kircher: neither one nor the other of the diagrams will bear the teſt of an impartial examination, or is worthy to be inſerted in any work intended to convey information to a ſober enquirer after truth; but the confidence with which Voſſius ſpeaks of his diſcovery will make it neceſſary to give his delineation of the hydraulic organ, together with a deſcription of it in his own words.

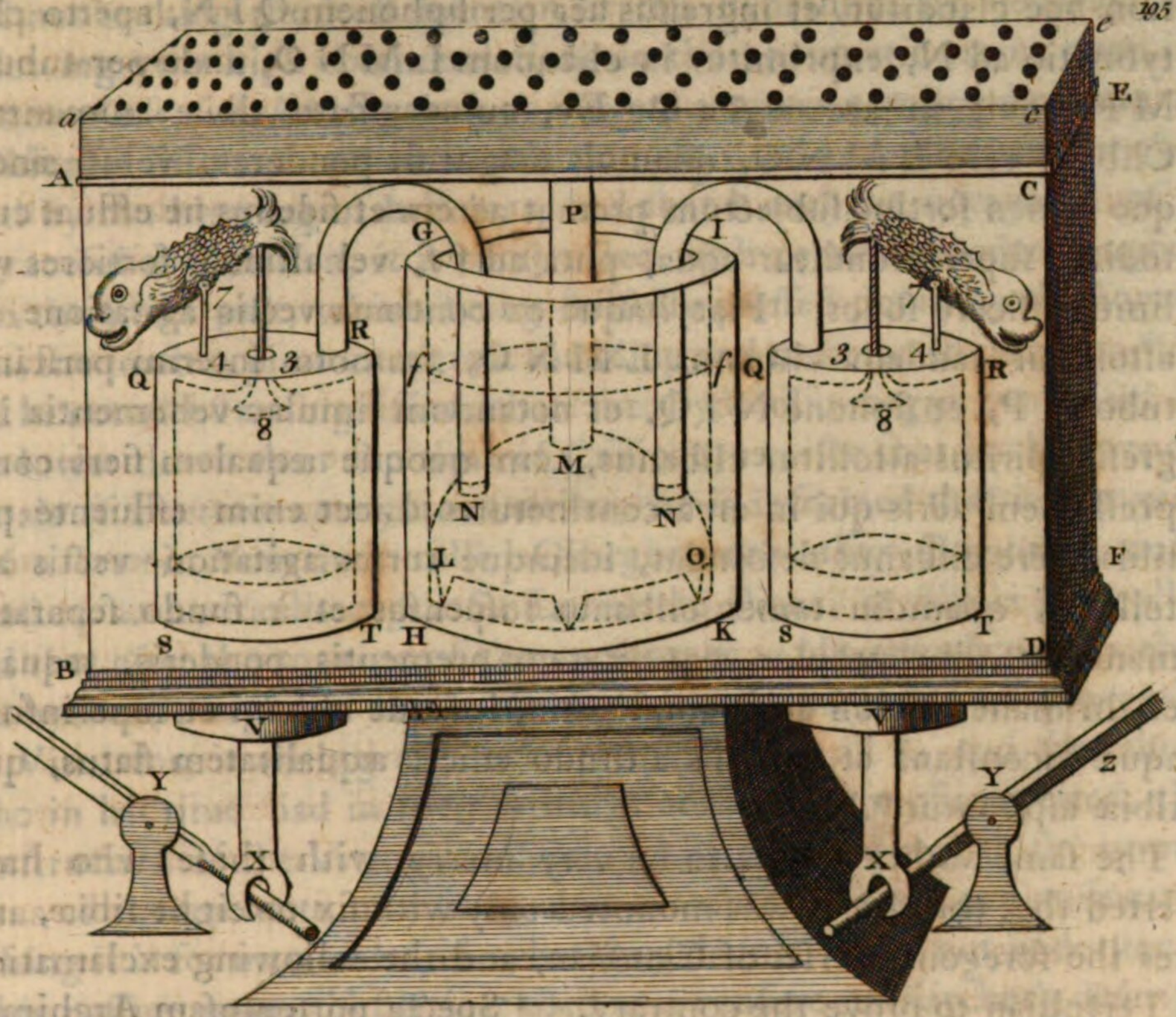
Kircher indeed, after all the pains he had taken, has the modeſty to confeſs the inferiority of the ancient hydraulic to the modern organ; for he ſays that if the former be compared to the latter it muſt ſeem a very inſignificant work, for, adds he, 'I cannot perceive what har-'mony a diſpoſition of four, five, ſix, or eight pipes could produce, 'and I very much wonder how Nero ſhould be ſo exceedingly af-'fected by ſo ſmall and poor an hydraulic, for Vitruvius teſtifies that 'when his life and empire were both in danger, and every thing at 'the laſt hazard by a ſedition of his generals and ſoldiers, he did not 'relinquiſh his great care and affection, or deſire thereof. We may 'from hence eaſily form a judgment what great pleaſure he muſt

* Ibid. cap. xii.

'have taken in our modern organs, not compoſed of four, five, ſix,
'or eight pipes, but ſuch as our greater organs of Germany, conſiſt-
'ing of eleven hundred and fifty-two double pipes, animated by the
'help of twenty-four different regiſters; or had he ſeen our auto-
'mata or engines of this kind, which move of their own accord
'without the help of any hand. Certainly theſe moſt enlightned
'ages have invented ſeveral things to which the inventions of the
'ancients can in no manner be compared *.'

Of a very different opinion is the before-cited Voſſius, who declares himſelf not aſhamed to aſſert, not only that the tibiæ alone of the ancients are by very far to be preferred to all the inſtruments of his age, but that, if we except the pipes of the organs, commonly uſed in churches, it will be found that ſcarce any others are worthy to be called by the name of tibiæ. And he adds, 'even thoſe
'very organs, which now pleaſe ſo much, can by no means be com-
'pared to the ancient hydraulics. And the modern Organarii, to
'ſpeak after the manner of the ancients, are not in reality Organarii,
'but Aſcaulæ or Utricularii, that is to ſay, Bag-pipers, for by that
'name were thoſe called who furniſh wind to the tibiæ by the
'means of bags or wallets, and bellows, as is done in churches.'
He farther ſays that 'thoſe are ridiculous who ſuppoſe the above ap-
'pellations to belong to thoſe mendicants who go about the ſtreets
'with a Cornamuſa, and with their arms force out continued and
'unpleaſing ſounds.' No, ſays this ſagacious writer, 'the Aſculæ or
'Utricularii did not in the leaſt differ from our modern organiſts;
'and the ancient Organarii were thoſe only who played on the hy-
'draulic organ, and they were ſo called from Organum, a brazen
'veſſel, conſtructed like a round altar, out of which the air by the
'help of the incumbent water is preſſed with great force, which yet
'flows equally into the tibiæ †'. After remarking on the bad ſucceſs of many who had attempted to find out the meaning of Vitruvius in his deſcription of this inſtrument, and to reſtore it to practice, he ſays very confidently that he himſelf has done it, and accordingly exhibits it in the following form.

* Muſurg. Univ. tom. II. pag. 333. † Voſſ. de Poemat. pag. 98.



And deſcribes it in theſe words: ‘ Fiat baſis lignea A B C D E F,
‘ et in ea conſtituatur ara rotunda G H I K ex ære fabricata et torno
‘ fideliter expolita. Fiat quoque clibanus ſeu hemiſphærium æreum
‘ L M N O, quam exactiſſime huic adaptatum. Sit vero in medio
‘ perforatus hic clibanus, et inſertum habeat tubum et ipſum æreum
‘ et utrinque apertum M P. Habeat quoque clibanus alterum fora-
‘ men, cui inſertus ſit ſiphon N I Q, cujus nares pertingunt ad mo-
‘ diolum æreum Q R S T. Siphon hic habeat aſſarium ſeu platyſma-
‘ tion ad N. Modiolo vero Q R S T aptetur embolus V cui af-
‘ fixa ſit regula firmiter admodum compacta V X, ita ut à vecte
‘ X Y Z embolus V commode moveri poſſit. Modiolus autem Q R
‘ S T habeat in ſuperiori ſuperficie aliud foramen 3, 4, cum platyſ-

‘ matio per quod aër ingredi poſſit. Iſte vero ingredietur cum vectis
‘ X Y Z in Z attollitur. Quando vero idem deprimitur, platyſma-
‘ tion hoc clauditur, et ingreſſus aër per ſiphonem Q I N, aperto pla-
‘ tyſmatio ad N, exprimitur in clibanum L M N O, unde per tubum
‘ M P influit in arcam A a C c E e, cujus afflatu tibiæ animantur.
‘ Clibano vero L M N O, quamvis magni ſit ponderes, veluti æneo,
‘ quo tamen fortius ſubjectum premat aërem et fidelius ne effluat cuſ-
‘ todiat, ſuperinfunditur aqua, puta ad f f, vel altius ſi fortiores ve-
‘ limus efficere ſonos. Fiat itaque ex continua vectis agitatione, ut
‘ attollatur tandem clibanus L M N O, immoto interim perſtante
‘ tubo M P, et ſiphone N I Q, et notandum ſimulac vehementia in-
‘ greſſi ſpiritus attollitur clibanus, tum quoque æqualem fieri com-
‘ preſſionem aëris qui in arca continetur. Licet enim effluente per
‘ tibias aëre clibanus deſcendat, idemque rurſus agitatione vectis at-
‘ tollatur, quamdiu tamen clibanus ſuſpenſus et à fundo ſeparatus
‘ manet, tandiu propter æqualitatem prementis ponderis, æqualis
‘ etiam manet incluſi aëris conſtipatio, ipſaque clibani et ſuperinfuſæ
‘ aquæ inconſtans et mobilis altitudo efficit æqualitatem flatus, quo
‘ tibiæ aſpirantur *.’

The ſame author affects to be very merry with thoſe who have aſſerted that this organ was mounted only with ſix or eight tibiæ, and cites the foregoing verſes of Claudian, and the following exclamation of Tertullian to prove the contrary. ‘ Specta portentoſam Archime-
‘ dis (Cteſibii rectius dixiſſet) munificentiam: organum hydraulicum
‘ dico, tot membra, tot partes, tot compagines, tot itinera vocum,
‘ tot compendia ſonorum, tot commercia modorum, tot acies tibia-
‘ rum, et una moles erunt omnia. Spiritus ille qui de tormento
‘ aquæ anhelat, per partes adminiſtratur, ſubſtantia ſolidus, opera di-
‘ viſus †.’ He ſays that the uſe of the hydraulic organ ceaſed before

* De Poemat. pag. 101.
In the cabinet of Chriſtina, queen of Sweden, was formerly a beautiful and large medallion of Valentinian; having on the reverſe one of theſe hydraulic organs, with two men, one on the right, the other on the left ſide thereof, ſeeming to pump the water which plays it, and to liſten to the ſound of it. It had only eight pipes, and thoſe were placed on a round pedeſtal; the inſcription PLACEA SPECTRI.

† Ibid. pag. 105. In Engliſh thus: Behold the wonderful munificence of Archimedes! (he ſhould have ſaid of Cteſibius) I mean the hydraulic organ; ſo many numbers, ſo many parts, ſo many joinings, ſo many roads or paſſages for the voices, ſuch a compendium of ſounds, ſuch an intercourſe of modes, ſuch troops of tibiæ, and all compoſing one great whole! The ſpirit or air which is breathed out from this engine of water, is adminiſtered through the parts, ſolid in ſubſtance, but divided in operation.

the

the time of Caſſidorus; and that the ſame appears from a paſſage in a diſcourſe of that author on the hundred and fiftieth Pſalm, wherein, without making the leaſt mention of the hydraulic, he beſtows the following very high commendations on the pneumatic organ, then in common uſe. 'An organ is as it were a tower compoſed of ſeveral 'different fiſtulæ or pipes, in which a moſt copious ſound is furniſh-'ed by the blowing of bellows: and that it may be compoſed of a 'graceful modulation, it is conſtructed with certain wooden tongues 'in the inner part, which being ſkilfully preſſed down by the fingers 'of the maſter, produce a great ſounding and moſt ſweet cantilena *.'

He notwithſtanding aſſerts that the hydraulic organ continued in uſe lower down than the time of Caſſiodorus; for that in the French annals of a certain anonymous writer, he is informed that in the year 826 a certain Venetian, called Georgius, or rather Gregorius, conſtructed an hydraulic organ for Lewis the Pious, at Aix la Chapelle, and that after the manner of the ancients †. He elſewhere ſays that the hydraulic organ of Daniel Barbaro, deſcribed in his Commentary on Vitruvius, is with great reaſon exploded by all ‡; and that thoſe who in his time had in their writings concerning muſic inſerted, the conſtruction of the Vitruvian organ, while they depreciate the inventions of the ancients, may ſerve as an example to ſhew how cuſtomary a thing it is for men to deſpiſe what they themſelves do not underſtand. This paſſage is manifeſtly intended as a cenſure on Kircher's deſcription of the hydraulic organ, and proves nothing but the extreme bigotry of Voſſius ‖. As to the hydraulic organs of modern Italy of which

* Organum itaque eſt quaſi turris, diverſis fiſtulis fabricata, quibus flatu follium vox copioſiſſima deſtinatur, et ut eam modulatio decora componat, linguis quibuſdam ligneis ab interiore parte conſtruitur, quas diſciplinabiliter magiſtrorum digiti reprimentes grandiſonem efficiunt et ſuaviſſimum cantilenam. De Poemat. pag. 106.

† De Poemat. 106. ‡ Ibid. pag. 99.

‖ The enthuſiaſtic attachment to antiquity of this author is ſtrongly evinced by the ſentiments he entertains of the energy of the ancient Tibia, which he ſcruples not to prefer to every inſtrument of modern invention. His words are theſe: 'As to what belongs 'to the cantus of the Tibia which is blown upon by the mouth, I think it may be truly 'ſaid that the tibiciniſts know no more concerning that inſtrument than the ancient ſhep-'herds, and perhaps not ſo much. This moſt excellent art is baniſhed among the men-'dicants; and the Tibia, which was by far preferred to all ſtringed inſtruments, and to 'all other inſtruments of muſic, is now ſilenced to ſuch a degree, that, if you except the 'Chineſe alone, who excel in this part, you will find none in this age that can even 'pleaſe a moderate ear; and the very name of the Tibia is juſtly deſpiſed by the European 'nations. That the Tibia was formerly held in greater eſteem, and accounted ſweeter 'than the lyre, is not only evinced by Ariſtotle, in his problems, but alſo by the very

'puniſh-

Graſſineau ſays there are ſeveral in the grottos of vineyards, particularly one belonging to the family d'Eſte, near the Tyber, deſcribed by Baptiſta Porta, he ſays they are very different, and no way reſemble the ancient hydraulic organ. Theſe perhaps will be found to be nothing more than the common organ played on by a barrel, which by a very eaſy contrivance is ſet in motion by a ſmall ſtream of water: and that theſe for more than a century paſt have been in uſe in various parts of Italy there is additional evidence. In a book ſuppoſed to be written by one Dr. Thomas Powell, a canon of St. David's, entitled Human Induſtry, or a Hiſtory of the Manual Arts, it is ſaid that pope Sylveſter II. made an organ which was played on by warm water; and that ſuch hydraulics, frequent in Italy, are ſounded with cold water. Oldys's Britiſh Librarian, No. I. pag 51. And in an old Engliſh comedy of Webſter, printed in 1623, intitled the Devil's Law-Caſe, Romelia, a wealthy merchant of Naples, ſpeaking of the greatneſs of his income ſays,

——————— My factors' wives
Weare ſhaperoones of velvet; and my ſcriveners,
Meerely through my employment, grow ſo rich
They build their palaces and belvidears
With *muſical water-workes.*

Comedy, which in general exhibits a very juſt repreſentation of contemporary manners and characters, is, in caſes of this ſort, authority: and the poet, in the paſſage above-cited, would hardly have pointed out this inſtance of Italian profuſion, had he not had ſome example in his eye to warrant it.

' puniſhment of Marſyas. How great the care and diligence of the ancients was in im-
' proving this inſtrument, ſufficiently appears from what both Theophraſtus and
' Pliny have wrote concerning the reeds of the lake Orchomenius. It was not ſuffi-
' cient that they were cut at certain periods of years, when the lake became dry;
' unleſs they were alſo macerated by the ſun, rain, and froſt, and afterwards ſoftened by
' long uſe; and, remaining without any defect, ſatisfied the wiſh of the artiſts. He who
' reads and conſiders theſe things, will the leſs wonder that ſometimes Tibiæ have been
' ſold for ſeven talents, as Lucian teſtifies.' Voſſius De Poemat. 107.

CHAP.

CHAP. VI.

BUT to return to the ancient hydraulic organ, a hundred queſtions might be aſked touching the uſe and application of its ſeveral parts, as alſo what ſyſtem it was adapted to; and particularly whether thoſe who have undertaken to delineate it with ſuch exactneſs, have not formed an idea of it from the organ of our own times, and done a violence to hiſtorical truth by incorporating two inſtruments, which cannot poſſibly exiſt in a ſtate of union. And after all that can be ſaid in favour of it, the cenſure of Kircher above-cited, muſt undoubtedly appear to be very juſt, and may ſerve to ſhew what little reaſon there is to lament the loſs of many inventions of the ancients, particularly thoſe in which the knowledge of mechanics is any way concerned. The hydraulic organ is one of thoſe ancient inventions mentioned by Pancirollus as now loſt *, a misfortune which at this day we lament perhaps with as little reaſon as we ſhould have for ſaying that the loſs of the ancient Clepſydræ † is not amply compenſated by the invention of clocks and watches. With reſpect to this inſtrument, it cannot ſo properly be ſaid to be loſt, as to have given way to one of a more artificial conſtruction, and nobler in its effects, as unqueſtionably the modern organ is. It is remarkable that thoſe who would infer the debility of the later ages, from the few

* Guido Pancirollus De Rerum memorabilium ſive deperditarum, lib. I. cap. ii.

† Clepſydra, an hour-glaſs made with water. The uſe of Clepſydræ was very ancient, and among the Romans there were ſeveral ſorts of them; in general they reſembled a ſand hour-glaſs, which is compoſed of two veſſels, ſo joined at top and bottom, as that what is contained in the upper may run into the under of them. The Clepſydræ contained water, which paſſing through a ſmall hole, imperceptibly raiſed a piece of cork with an index fixed thereto that pointed to the hours marked on the under glaſs. They were all ſubject to two inconveniences: the firſt was that which Plutarch takes notice of, to wit, that the water paſſed through with more or leſs difficulty, according as the air was more or leſs thick, cold, or hot, for that hindered the hours from being equal; the other was, that the water ran faſter at firſt, when the veſſel from whence the water came was full, than at laſt.

Theſe Clepſydræ were chiefly uſed in a city called Achanta, beyond the Nile. In this city there was an huge veſſel of this kind, into which three hundred and ſixty-five prieſts daily brought water from the Nile, which running out from the veſſel again, declared the hours. The uſe of the Clepſydra was to tell the hour in the night, or in cloudy weather, when it could not be found by the ſun-dial.

remaining monuments of ancient ingenuity, generally confine themſelves to poeſy, ſculpture, and other arts, which owe their perfection rather to adventitious circumſtances, than to the vigorous exertion of the powers of invention: but, with reſpect to inſtruments, machines, and engines of various kinds, it is not in the nature of things poſſible but that mankind muſt continue to improve as long as the world ſhall laſt.

NICOMACHUS GERASENUS, ſo called from his having been born in Geraſa, a city of Arabia, lived about A. C. 60. He was a philoſopher, and wrote an Introduction to Harmony, at the requeſt, as it ſhould ſeem by the beginning of it, of ſome learned female contemporary. He was a follower of Pythagoras; and it is by this work alone that we know how, and by what means, his maſter diſcovered the conſonances. He begins his work with an addreſs to his female friend, whom he ſtyles the moſt virtuous of women; and reflects with ſome concern on the difference in ſentiment of the ſeveral writers on the elements of harmony. He excuſes his inability to reconcile them by reaſon of the long journeys he is obliged to take, and his want of leiſure, which he prays the gods to vouchſafe him, and promiſes to complete a work which he has in contemplation, of which what he now gives ſeems to be but a part. Profeſſing to follow the Pythagoreans, he conſiders the human voice as emitting ſounds, which are either commenſurable by intervals, as when we are ſaid to *ſing*; or incommenſurable, as when we converſe by ſpeech. In this latter uſe of the voice, he ſays, we are not obliged by any rule; but in the former we are bound to an obſervance of thoſe intervals and magnitudes in which harmony does conſiſt.

The ſounds and their names, continues this author, are probably taken from the ſeven planets in the heavens which ſurround this earth; for it is ſaid that all bodies which are carried round with any great degree of velocity, muſt neceſſarily, and by reaſon of their magnitude, and the celerity of their motions, cauſe a ſound, which ſound will vary in proportion to the degrees of magnitude in each, the celerity of their motions, or the repreſſion of the orb wherein they act. Theſe differences, he ſays, are manifeſt in the planets, which perpetually turn round, and produce their proper ſounds: for example, the motion of Saturn, the planet moſt diſtant from us, produces a ſound the moſt grave, in which it reſembles the conſonance diapaſon; as does

Hypate,

Hypate, which ſignifies the ſame as principal. To the motion of the moon, the loweſt of the planets, and neareſt the earth, we apply the moſt acute term, called Nete, for Neaton is the ſame as low.

He then proceeds to declare the ſuppoſed analogy between the reſt of the planets and the intermediate chords, as mentioned in the foregoing account of Pythagoras. But here it may be proper to take notice that the ancient writers were not unanimous in opinion that the graver ſounds were produced by the bodies of greateſt magnitude: Cicero, in particular, is by Glareanus * ſaid to have maintained that the leſſer bodies produce the graver ſounds, and the greater the more acute. And from this dictum of Cicero, Glareanus has been at the pains of forming a diagram, intended to repreſent this fanciful coincidence of revolutions and harmonies, which is given in a ſubſequent page of this work.

In the Somnium Scipionis, which is what Glareanus means when he refers to Cicero de Republica, lib. VI. is a great deal concerning the muſic of the ſpheres in general; and Macrobius, in his commentary on that fragment, has made the moſt of it. Nevertheleſs the general ſentiment of mankind ſeems till very lately † to have been that the whole doctrine is to be regarded as a poetical fiction; and as to the fact, that it has no foundation in reaſon or philoſophy.

But to return to our author Nicomachus, and his opinion of the harmony of the planets: it is true, ſays he, that it is inaudible to our ears, but to our reaſon it is clear.

Nicomachus proceeds to define the terms made uſe of by him, diſtinguiſhing, as others of the ancients do, between ſound and noiſe. Speaking of inſtruments, he ſays they are of two kinds, viz. ſuch as are blown, as are the flute, trumpet, organ, and the like; or ſuch as are ſtrung, to wit, the lute, lyre, and harp; of the latter kind are alſo the monochord, by many called the Pandora ‡, and by the Py-

* Dodecachordon, lib. II. cap. xiii.

† See a ſubſequent note, in the preſent book, containing the ſentiments of Dr. Gregory and Mr. Maclaurin on this ſubject.

‡ An appellative from which the Engliſh word Bandore ſeems clearly to be derived. Meibomius gives the following note on this paſſage.

'Φανδουρος. [Phandourous.] Heſychius ſpeaks of it thus: "Pandura or Panduris is a mu-
"ſical inſtrument; Pandurus he who plays on that inſtrument." Monochords were alſo
'by ſome called Phanduras. Nicomachus here ſays the ſame, and ſeems as if he approv-
'ed of the practice. Theſe inſtruments are various; Pollux, lib. IV. cap. ix. ſays, "The
"monochord was invented by the Arabians, and the trichord by the Aſſyrians, who gave

thagoreans the Canon, and alſo the Trigon or triangular dulcimer. He alſo mentions crooked and other flutes made of the box-tree, of which he propoſes to ſpeak again. Of the ſtringed ſpecies he ſays thoſe with the greater tenſions expreſs the more acute ſounds; on the contrary, thoſe with the leſſer give the more languid and grave; and in inſtruments that are blown, the more hollow and long, the more languid and grave are their ſounds. He then proceeds to relate how Pythagoras diſcovered the conſonances, and to give that account of his ſyſtem which Stanley has taken into his life of that philoſopher, and is inſerted in the foregoing part of this work, together with ſome remarks, the reſult of late experiments, which in ſome degree, though not eſſentially, weaken the credit of the relation.

But without enquiring farther into the weight of the hammers, and other circumſtances attending the diſcovery of the conſonances, we may very ſafely credit Nicomachus, ſo far as to believe that Pythagoras, by the means of chords of different lengths, did diſcover them; that the philoſopher to the ſound produced by the firſt number ſix, gave the name Hypate; to eight he gave Meſe, which is ſeſquitertian thereto; to nine Parameſe, which is a tone more acute, and therefore ſeſquioctave of the laſt; and to the laſt number, twelve, he gave the name Nete; and afterwards filled up the intermediate ſpaces with ſounds in the ſucceſſion proper to the diatonic genus, and thereby completed the ſyſtem of eight chords. The diatonic genus, as this author deſcribes it, is a natural progreſſion to the ſyſtem of a diateſſaron by a ſemitone, tone, and tone; and to a diapente by three tones and a ſemitone. This is the manner in which it is ſaid the ancient ſyſtem was adjuſted and extended to that of a complete octave, an improvement ſo much the more to be valued, as we are told that in the ancient or primitive lyre, all the ſounds from the loweſt were fourths to each other *; whereas in the Pythagorean lyre, compoſed

" it the name of Pandura." He juſtly ſays that Pandura was an Aſſyrian word. But the ' moſt learned of the Hebrews do not ſeem ſufficiently to underſtand the ſignification of ' it; they explain it by a twig or rod, whip, thong of leather, as appears from Buxtorf in ' the Talmudical Lexicon, from Talmud Hieroſol. I imagine the true origin of ' this appellation to be this, the inſtrument was mounted or ſtretched with thongs ' of bull's hides, in the ſame manner as the pentachord of the Scythians, concerning ' which the ſame Pollux ſpeaks thus: " The pentachord is an invention of the Scythians; " it was ſtretched or mounted with thongs made of the raw hides of oxen, but their plectra " were the jaw-bones of ſhe-goats."

* Nicomach. Harmonic. Manual. pag. 5, ex verſ. Meibom.

of

of a tetrachord and pentachord conjoined; or, which is the ſame, of two tetrachords disjoined by an intervening tone, we have a continued progreſſion of ſounds.

Nicomachus proceeds to relate that the magnitude of the ſcale in the diatonic genus is two diapaſons, for that the voice cannot eaſily extend itſelf either upwards or downwards beyond this limit; and for this reaſon, to the ancient lyre formed of ſeven ſtrings, by the conjunction of two tetrachords, extending from Hypate to Meſe, and thence to Nete, were adjoined two tetrachords, each at the outward extremity of the former; that which began at Nete was called Hyperboleon, ſignifying excellent. This tetrachord, he ſays, conſiſts of three adjoined ſounds, whoſe names are worthy to be remembered; as firſt, Trite hyperboleon, then Paranete hyperboleon, and laſtly, Nete hyperboleon. The other tetrachord was joined to the chord Hypate, and was thence called Hypaton; and each of the three adjoined ſounds had the addition of Hypaton to diſtinguiſh it from the chord of the ſame denomination in the lower of the two primitive tetrachords; thus Hypate hypaton, Parhypate hypaton, Diatonos hypaton, or Lychanos hypaton, for it matters not which it is called; and this ſyſtem from Hypate hypaton to Meſe is ſeven chords, making two conjoint tetrachords; and that from Hypate hypaton to Nete is thirteen; ſo that Meſe having the middle place, and conjoining two ſyſtems of a ſeptenary each, reckoning either upwards from Hypate hypaton, or downwards from Nete hyperboleon, each ſyſtem contained ſeven chords.

From this it is evident that the additional tetrachords were originally adapted to the ſyſtem of Terpander, which did not ſeparate Meſe from Trite by a whole tone, as that of Pythagoras did. What advantages could be derived from this addition it is not eaſy to ſay; nor is it conceivable that that ſyſtem could be reducible to practice which gave to a nominal diapaſon four tones and three hemitones, inſtead of five tones and two hemitones.

But the addition of the new tetrachords to the two disjunct tetrachords of Pythagoras was very natural, and made way for what this author next proceeds to mention, the tetrachord ſynemmenon, which took place in the middle of that interval of a tone, by which Pythagoras had divided the two primitive tetrachords. The deſign of introducing this tetrachord ſynemmenon, which placed Trite but a he-

mitone diſtant from Meſe, was manifeſtly to give to Parhypate meſon what it wanted before, a perfect diateſſaron for its nominal fourth; and this opinion of its uſe is maintained by all who have written on the ſubject of muſic.

The author then proceeds to a verbal enumeration of the ſeveral chords, which by the disjunction made by Pythagoras, and the addition of Proſlambanomenos, it appears were encreaſed to fifteen, with their reſpective tonical diſtances: it has already been mentioned, that, contrary to the method now in uſe, the ancients gave the moſt grave ſounds the uppermoſt place in their ſcale; he therefore begins with Proſlambanomenos and reckons downwards to Nete hyperboleon.

He gives the ſame kind of enumeration of the ſeveral ſounds that compoſe the tetrachord ſynemmenon, having firſt Trite ſynemmenon at the diſtance of a hemitone from Meſe, then after a tone Paranete ſynemmenon, and after another tone Nete ſynemmenon of the ſame tenor and ſound as Paranete diezeugmenon.

Meſe
Hemitone
Trite
Tone
Paranete
Tone
Nete

So that there exiſt five tetrachords, Hypaton, Meſon, Synemmenon, Diezeugmenon, and Hyperboleon; though it is to be remembered that the third of theſe is but auxiliary, and whenever it is uſed it is only in the room of the fourth, for reaſons before given; and in theſe tetrachords there are two disjunctions and three conjunctions; the disjunctions are between Nete ſynemmenon and Nete diezeugmenon, and between Proſlambanomenos and Hypate hypaton: the conjunctions are between Hypaton and Meſon, and, which is the ſame, Meſon and Synemmenon, and between Diezeugmenon and Hyperboleon.

We muſt underſtand that the foregoing is a repreſentation of the tetrachords as they are divided in the diatonic genus, the characteriſtic whereof is a progreſſion by a hemitone, tone, and tone; for as to the other genera, the chromatic and enharmonic, this author profeſſes

feſſes not to deliver his ſentiments, but promiſes to give them at large, together with a regular progreſſion in all the three in his Commentaries, a work he often ſpeaks of, as having undertaken it for the information of his learned correſpondent: he alſo engages to give the teſtimonies of the ancients, the moſt learned and eloquent of men on this ſubject, and an expoſition of Pythagoras's ſection of the canon, not as Eratoſthenes or Thraſyllus badly underſtand it, but according to Locrus Timæus, the follower of Plato, although nothing of his on the ſubject is remaining at this day; however he has given an idea of the genera in the following words: 'The firſt and moſt ſimple of 'conſonances is the diateſſaron. The diatonic tetrachord proceeds 'by a hemitone, tone, and tone, or four ſounds and three intervals; 'and it is called diatonic, as proceeding chiefly by tones. The chro-'matic progreſſion in the tetrachord is by a hemitone, hemitone, 'and an incompoſite trihemitone, and therefore, though not conſti-'tuted as the other, it contains an equal number of intervals. The 'enharmonic progreſſion is by a dieſis, which is half a hemitone, 'another dieſis, alſo half a hemitone, and the remainder is an in-'compoſite ditone; and theſe latter are alſo equal to a hemitone and 'two tones. Amongſt theſe it is impoſſible to adapt ſound to ſound, 'for it is plain that the difference of the genera does not conſiſt in 'an interchange of the four ſounds, but only of the two intermediate 'ones; in the chromatic the third ſound is changed from the diato-'nic, but the ſecond is the ſame, and it has the ſame ſound as the 'enharmonic; and in the enharmonic the two intermediate ſounds 'are changed, with reſpect to the diatonic, ſo as the enharmonic is 'oppoſite to the diatonic, and the chromatic is in the middle be-'tween them both; for it differs only a hemitone from the diatonic, 'whence it is called chromatic, from Chroma, a word ſignifying a 'diſpoſition flexible and eaſy to be changed: in oppoſition to this 'we call the extremes of each tetrachord Stantes, or ſtanding ſounds, 'to denote their immovable poſition. This then is the ſyſtem of the 'diapaſon, whether from Meſe to Proſlambanomenos, or from Meſe 'to Nete hyperboleon; and as the diateſſaron is two tones and a he-'mitone, and the diapente three tones and a hemitone, the diapaſon 'ſhould ſeem to be ſix whole tones; but in truth it is only five 'tones and two hemitones, which hemitones are not ſtrictly com-'plete; and therefore the diapaſon is ſomewhat leſs than ſix complete

'whole

'whole tones*: and with this agree the words of Philolaus when he 'ſays that harmony hath five ſuperoctaves and two dieſes; now 'a dieſis is the half of a hemitone, and there is another hemitone 'required to make up the number ſix.'

His ſecond book Nicomachus begins with an account of the invention of the lyre by Mercury, already related, and which has been adopted by almoſt every ſucceeding writer on muſic, adding that ſome among the ancients aſcribed it to Cadmus the ſon of Agenor. He proceeds to ſtate the proportions, which he does in a way not eaſily reconcileable with the practice of the moderns: he then reconſiders the ſuppoſed relation between the ſounds in the harmonical ſeptenary and the motions of the planets; and endeavours to account for theſe different denominations, which it ſeems were given them in his days. He ſays that the chord Hypate is applied to Saturn, as the chief of the planets, and Nete to Luna, as the leaſt. Meſe is Sol, Parhypate is attributed to Jove, Parameſe not to Mercury but to Venus, by a perverſe order, ſays his editor, unleſs there is an error in the manuſcript. Parameſe to Mars, Trite to Venus, Luna or the Moon is ſaid to be acute, as it anſwers to Nete; and Saturn grave as is Hypate. Thoſe that reckon contrarywiſe, applying Hypate to the Moon, and Nete to Saturn, do it, becauſe ſay they the graver ſounds are produced from the lower and more profound parts of the body, and therefore are properly adapted to the lower orbs; whereas the acute ſounds are formed in the higher parts, and do therefore more naturally reſemble the more remote of the heavenly bodies:

Saturn - - -	Nete
Jupiter - - -	Paranete
Mars - - -	Parameſe
Sol - - -	Meſe
Venus - - -	Lichanos
Mercury - - -	Parhypate
Luna - - -	Hypate

Nicomachus then proceeds to enumerate the ſeveral perſons who added to the ſyſtem of the diapaſon, completed as it was by Pythagoras; but as he expreſsly ſays the additional chords were not ad-

* This is demonſtrated by Ptolemy, lib. I. cap. xi. of his Harmonics, and alſo by Boetius, lib. V. cap. xiii.

juſted in any preciſe ratio, and as their names have already been given, it ſeems needleſs to be more particular about them. Speaking of the great ſyſtem, viz. that of the diſdiapaſon, he cites Ptolemy, to ſhew that it muſt neceſſarily conſiſt of fifteen chords; but as it is certain that Nicomachus lived A. C. 60, and that Claudius Ptolemæus flouriſhed about one hundred and forty years after the commencement of the Chriſtian æra, there ariſes an anachroniſm, which is not to be accounted for but upon a ſuppoſition that the manuſcript is corrupted. From divers paſſages in this author, and others to be met with in the Greek writers, it is evident that the ancients were not wholly unacquainted with the doctrine of the vibrations of chords: they had obſerved that the acute ſounds were produced by quick, and the grave by ſlow motions, and that the conſonances aroſe from a coincidence of both; but it no where appears that they made any uſe of the coincidences in adjuſting the ratios of the conſonances; on the contrary, they ſeem to have referred the whole to the ratio of lengths and tenſions by weights, and a diviſion of the monochord; and in this reſpect it is unqueſtionably true that the ſpeculative part of muſic has received conſiderable advantages from thoſe improvements in natural philoſophy which in the latter ages have been made. The inquiſitive and acurate Galileo was the firſt that inveſtigated the laws of pendulums; he found out that all the vibrations of the ſame ſtring, the longer and the ſhorter, were made in equal time, that between the length of a chord and the number of its vibrations, there ſubſiſts a duplicate proportion of length to velocity; and that the length quadrupled will ſubduple the velocity of the vibrations, and the length ſubquadrupled will duple the vibrations; for the proportion holds reciprocally: adding to the length will diminiſh, and ſhortening it will encreaſe the frequency of vibrations. Theſe, and numbers of other diſcoveries, the reſult of repeated experiments, have been found of great uſe, as they were ſoon after the making of them applied to the meaſure of time, and other moſt valuable purpoſes.

Having given an extract which contains in ſubſtance almoſt the whole of what Nicomachus has left us on the ſubject of harmony, it remains to obſerve that his work is manifeſtly incomplete: it appears from his own words to have been written while he was upon a journey, and for the particular information of the lady to whom he has, in

terms

terms of the greateſt reſpect, inſcribed it; and is no other than what he himſelf with great modeſty entitles it, a Manual; it is however to be eſteemed a very valuable fragment, as it is by much the moſt clear and intelligible of the works of the Greek writers now remaining. Boetius, in his treatiſe De Muſica, cites divers paſſages from Nicomachus that are not to be found in this diſcourſe of his, from whence it is highly probable that he had ſeen thoſe commentaries which are promiſed in it, or ſome other tract, of which at this diſtance of time no account can be given.

CHAP. VII.

PLUTARCH is alſo to be numbered among the ancient writers on muſic, for in his Sympoſiacs is a diſcourſe on that ſubject, which is much celebrated by Meibomius, Doni, and others. A paſſage in the French tranſlation, by Amyot, of the works of that philoſopher, has given riſe to a controverſy concerning the genuineneſs of this tract, the merits of which will hereafter be conſidered. This diſcourſe contains in it more of the hiſtory of the ancient muſic and muſicians than is to be met with anywhere elſe, for which reaſon it is here meant to give a copious extract from it. It is written in dialogue; the ſpeakers are Oneſicrates, Soterichus, and Lyſias.

The latter of theſe, in anſwer to a requeſt of Oneſicrates, gives a relation of the origin and progreſs of the ſcience, in ſubſtance as follows.

'According to the aſſertion of Heraclides, in a Compendium of 'Muſic, ſaid to have been written by him, Amphion, the ſon of Ju-'piter and Antiope, was the inventor of the harp and of Lyric poeſy; 'and in the ſame age Linus the Eubean compoſed elegies: Anthes 'of Anthedon in Bœotia was the firſt author of hymns, and Pierius of 'Pieria of verſes in honour of the Muſes; Philamon the Delphian 'alſo wrote a poem, celebrating the nativity of Latona, Diana, and 'Apollo; and was the original inſtitutor of dancing about the tem-'ple of Delphos. Thamyris, of Thracian extraction, had the fineſt 'voice, and was the beſt ſinger of his time, for which reaſon he is 'by the poets feigned to have contended with the Muſes; he wrought

'into

'into a poem the war of the Titans againſt the Gods. Demodocus 'the Corcyrean wrote in verſe the hiſtory of the deſtruction of 'Troy, and the nuptials of Vulcan and Venus. To him ſucceeded 'Phemius of Ithaca, who compoſed a poem on the return of thoſe 'who came back with Agamemnon from the ſiege of Troy; and 'beſides that theſe poems were ſeverally written by the perſons 'abovenamed, they were alſo ſet to muſical notes by their reſpective 'authors. The ſame Heraclides alſo writes that Terpander was the 'inſtitutor of thoſe laws by which the metre of verſes, and conſe-'quently the muſical meaſure, were regulated; and according to 'theſe rules he ſet muſical notes both to his own and Homer's words, 'and ſung them at the public games to the muſic of the lyre. Clo-'nas, an epic and elegiac poet, taking Terpander for his example, 'conſtituted rules which ſhould adjuſt and govern the tuning and 'melody of flutes or pipes, and ſuch like wind-inſtruments; and in 'this he was followed by Polymneſtes the Colophonian.

'Timotheus is ſaid to have made lyric preludes to his epic poems, 'and to have firſt introduced the dithyrambic, a meaſure adapted to 'ſongs in the praiſe of Bacchus, which ſongs required a violent mo-'tion of the body, and a certain irregularity in the meaſure.'

'Farther of Terpander, one of the moſt ancient of muſicians, he 'is recorded to have been four times a victor at the Pythian games.'

'Alexander the hiſtorian ſays, that Olympus brought into Greece 'the practice of touching the ſtrings of the lyre with a quill; for 'before his time they were touched by the fingers: and that Hyag-'nis was the firſt that ſang to the pipe, and Marſyas his ſon the next, 'and that both theſe were prior to Olympus. He farther ſays that 'Terpander imitated Homer in his verſes, and Orpheus in his mu-'ſic; but that Orpheus imitated no one. That Clonas, who was 'ſome time later than Terpander, was, as the Arcadians affirm, a 'native of Tegea, a city of Arcadia; though others contend that he 'was born in Thebes; and that after Terpander and Clonas flou-'riſhed Archilochus: yet ſome writers affirm that Ardalus the Troe-'zenian taught wind-muſic before Clonas.'

'The muſic appropriated to the lyre under the regulations of Ter-'pander continued without any variation, till Phrynis became fa-'mous, who altered both the ancient rules, and the form of the in-'ſtrument to which they were adapted.'

Having thus diſcourſed concerning the ancient muſicians, and ſtringed and wind-inſtruments in general, Lyſias proceeds, and confining himſelf to the inſtruments of the latter kind, ſpeaks to this effect.

'Olympus, a Phrygian, and a player on the flute, invented a certain 'meaſure in honour of Apollo, which he called Polycephalus or of 'many heads. This Olympus, as it is ſaid, was deſcended from the 'firſt Olympus, the ſon of Marſyas, who being taught by his father 'to play on the flute, firſt brought into Greece the laws of harmony. 'Others aſcribe the invention of the Polycephalus to Crates, the diſ-'ciple of Olympus. The ſame Olympus was the author of the Har-'matian mood, as Glaucus teſtifies in his treatiſe of the ancient 'poets, and as ſome think of the Orthian mood alſo*. There 'was alſo another mood in uſe among the ancients, termed Cra-'dias, which Hipponax the Mimnermian greatly delighted in. 'Sacadas of Argos, being himſelf a good poet, compoſed the muſic 'to ſeveral odes and elegies, and became thrice a victor at the Py-'thian games. It is ſaid that this Sacadas, in conjunction with Po-'lymneſtes, invented three of the moods, the Dorian, the Phry-'gian, and the Lydian; and that the former compoſed a ſtrophe, 'the muſic whereof was a commixture of all the three. The origi-'nal conſtitution of the modes was undoubtedly by Terpander, at 'Sparta; but it was much improved by Thales the Gortynian, Xe-'nedamus the Cytherian, Xenocritus the Locrian, and Polymneſtes 'the Colophonian.'

'Ariſtoxenus aſcribes to Olympus the invention of the enarmonic 'genus; for before his time there were no other than the diatonic and 'chromatic genera.'

'As to the meaſures of time, they were invented at different periods 'and by different perſons. Terpander, amongſt other improvements

* Theſe moods, the Harmatian and Orthian, were unqueſtionably moods of time. The former, if we may truſt the Engliſh tranſlator of Plutarch's Dialogue on Muſic, as it ſtands in the firſt volume of his Morals, Lond. 1684, was the meaſure termed by Zarlino, La Curule, in which it is ſuppoſed was ſung the ſtory of Hector's death, and of the dragging him in a chariot round the walls of Troy: of the Orthian mood the ſame tranſlator gives the following deſcription: 'This mood conſiſted of ſwift and loud notes, 'and was uſed to inflame the courage of ſoldiers going to battle, and is mentioned by 'Homer in the ſeventh book of the Iliad, and deſcribed by Euſtathius. This mood Arion 'made uſe of when he flung himſelf into the ſea, as Aulus Gellius writes, lib. XVI. 'cap. xix. the time of it was two down and four up.' Meibomius on Ariſtides.

'which

'which he made in muſic, introduced thoſe grave and decent meaſures
'which are its greateſt ornament; after him, beſides thoſe of Terpan-
'der, which he did not reject, Polymneſtes brought into uſe other mea-
'ſures of his own; as did alſo Thales and Sacadas, who, though of
'fertile inventions, kept within the bounds of decorum. Other im-
'provements were alſo made by Steſichorus and Alcmas, who never-
'theleſs receded not from the ancient forms; but Crexus, Timotheus,
'and Philoxenus, and others of the ſame age, affecting novelty, de-
'parted from the plainneſs and majeſty of the ancient muſic.'

Another of the interlocutors in this dialogue of Plutarch, Soterichus by name, who is repreſented as one not only ſkilled in the ſcience but eminently learned, ſpeaks of the invention and progreſs of muſic to this effect.

'Muſic was not the invention of any mortal, but we owe it to the
'god Apollo. The flute was invented neither by Marſyas, nor
'Olympus, nor Hyagnis, but Apollo invented both that and the
'lyre, and, in a word, all manner of vocal and inſtrumental muſic.
'This is manifeſt from the dances and ſacrifices which were ſolemniz-
'ed in honour of Apollo. His ſtatue, placed in the temple of Delos,
'holds in his right hand a bow, and at his left the Graces ſtand with
'each a muſical inſtrument in her hand, one bearing a lyre, another
'a flute, and another a ſhepherd's pipe; and this ſtatue is reported
'to be as ancient as the time of Hercules. The youth alſo that car-
'ries the tempic laurel into Delphos is attended by one playing on
'the flute; and the ſacred preſents of the Hyperboreans were ſent of
'old to Delos, attended by flutes, pipes, and lyres; and ſome have
'aſſerted that the God himſelf played on the flute. Venerable there-
'fore is muſic, as being the invention of Gods; but the artiſts of
'theſe later times, contemning its ancient majeſty, have introduced
'an effeminate kind of melody, mere ſound without energy. The
'Lydian mode, as firſt inſtituted, was very doleful, and ſuited only
'to lamentations; wherefore Plato in his Republic utterly rejects it.
'Ariſtoxenus in the firſt book of his Harmonics relates that Olympus
'ſung an elegy in that mode on the death of Python; though ſome
'attribute the invention of the Lydian mode to Menalippides, and
'others to Torebus. Pindar aſſerts that it was firſt uſed at the nup-
'tials of Niobe; Ariſtoxenus, that it was invented by Sappho, and

'that the tragedians learned it of her, and conjoined it with the Do-
'rian; but this is denied by thoſe who ſay that Pythocleides the
'player on the flute, and alſo Lyſis the Athenian, invented this con-
'junction of the Dorian with the Lydian mode. As to the ſofter
'Lydian, which was of a nature contrary to the Lydian properly ſo
'called, and more reſembling the Ionian, it is ſaid to have been in-
'vented by Damon the Athenian. Plato deſervedly rejected theſe
'effeminate modes, and made choice of the Dorian, as more ſuit-
'able to warlike tempers; not that we are to ſuppoſe him ignorant
'of what Ariſtoxenus has ſaid in his ſecond book, that in a wary
'and circumſpect government advantages might be derived from the
'uſe of the other modes; for Plato attributed much to muſic, as
'having been a hearer of Draco the Athenian, and Metellus of Agri-
'gentum; but it was the conſideration of its ſuperior dignity and
'majeſty that induced him to prefer the Dorian mode. He knew
'moreover that Alcmas, Pindar, Simonides, and Bacchylides, had
'compoſed ſeveral Parthenioi in the Dorian mode; and that ſuppli-
'cations and hymns to the Gods, tragical lamentations, and ſome-
'times love-verſes were alſo compoſed in it; but he contented himſelf
'with ſuch ſongs as were made in honour of Mars and Minerva, or
'thoſe other that were uſully ſung at the ſolemn offerings called
'Spondalia. The Lydian and Ionian modes were chiefly uſed by the
'tragedians, and with theſe alſo Plato was well acquainted. As to
'the inſtruments of the ancients, they were in general of a narrow
'compaſs; the lyre uſed by Olympus and Terpander and their fol-
'lowers had but three chords, which is not to be imputed to ig-
'norance in them, for thoſe muſicians who made uſe of more were
'greatly their inferiors both in ſkill and practice.'

'The chromatic genus was formerly uſed by thoſe who played on
'the lyre, but by the tragedians never. It is certainly of greater an-
'tiquity than the enarmonic; yet the preference given to the dia-
'tonic and enarmonic was not owing to ignorance, but was the ef-
'fect of judgment. Telephanes of Megara was ſo great an enemy to
'the ſyrinx or reed-pipe, that he would never ſuffer it to be joined
'to the tibia; or that other pipe made of wood, generally of the
'lote-tree, and for that reaſon he forbore to go to the Pythian
'games. In ſhort, if a man is to be deemed ignorant of that which
'he makes no uſe of, there would be found a great number of igno-

rant

'rant perſons in this age; for we ſee that the admirers of the Dorian 'mode make no uſe of the Antigenidian method of compoſition: and 'other muſicians refuſe to imitate Timotheus, being bewitched with 'the trifles and idle poems of Polyeides.'

'If we compare antiquity with the preſent times, we ſhall find 'that formerly there was great variety in muſic, and that the diverſi-'ties of meaſure were then more eſteemed of than now. We are now 'lovers of learning, they were lovers of time and meaſure; plain it is 'therefore that the ancients did not becauſe of their ignorance, but 'in conſequence of their judgment, refrain from broken meaſures; 'and if Plato preferred the Dorian to the other modes, it was only 'becauſe he was the better muſician; and that he was eminently 'ſkilled in the ſcience appears from what he has ſaid concerning the 'procreation of the ſoul in his Timæus.'

'Ariſtotle, who was a diſciple of Plato, thus labours to convince 'the world of the majeſty and divine nature of muſic; "Harmony, "ſaith he, deſcended from heaven, and is of a divine, noble, and "angelic nature; being fourfold as to its efficacy, it has two me-"diums, the one arithmetical, the other harmonical. As for its "members, its dimenſions, and exceſſes of intervals, they are beſt "diſcovered by number and equality of meaſure, the whole ſyſtem "being contained in two tetrachords."

'The ancient Greeks were very careful to have their children 'thoroughly inſtructed in the principles of muſic, for they deemed it 'of great uſe in forming their minds, and exciting in them a love of 'decency, ſobriety, and virtue: they alſo found it a powerful incen-'tive to valour, and accordingly made uſe of pipes or flutes when 'they advanced to battle: the Lacedemonians and the Cretans did 'the ſame; and in our times the trumpet ſucceeding the pipe, as 'being more ſonorous, is uſed for the ſame purpoſe. The Argives 'indeed at their wreſtling matches made uſe of fifes called Schenia, 'which ſort of exerciſe was at firſt inſtituted in honour of Danaus, 'but afterwards was conſecrated to Jupiter Schenius or the Mighty; 'and at this day it is the cuſtom to uſe fifes at the games called Pen-'tathla, which conſiſt of cuffing, running, dancing, hurling the 'ball, and wreſtling. But among the ancients, muſic in the theatres 'was never known; for either they employed it in the education of

'their

'their youth, or confined it within the walls of their temples; but 'now our muſicians ſtudy only compoſitions for the ſtage.'

'If it ſhould be demanded, Is muſic ever to remain the ſame, and 'is there not room for new inventions? The anſwer is that new in- 'ventions are allowed, ſo as they be grave and decent; the ancients 'themſelves were continually adding to and improving their muſic. 'Even the whole Mixolydian mode was a new invention; ſuch alſo 'were the Orthian and Trochean ſongs; and, if we may believe 'Pindar, Terpander was the inventor of the Scolian ſong, and Ar- 'chilocus of the iambic and divers other meaſures, which the tra- 'gedians took from him, and Crexus from them. The Hypolydian 'mode was the invention of Polymneſtes, who alſo was the firſt that 'taught the manner of alternately ſoft and loud. Olympus, beſides 'that he regulated in a great meaſure the ancient Greek muſic, 'found out and introduced the enarmonic genus, and alſo the Pro- 'ſodiac, the Chorian, and the Bacchian meaſures; all which it is 'manifeſt were of ancient invention. But Laſus Hermionenſis * 'applying theſe meaſures to his dithyrambic compoſitions, and mak- 'ing uſe of an inſtrument with many holes, by an addition of tones 'and hemitones made an abſolute innovation in the ancient muſic. 'In like manner Menalippides the lyric poet, Philoxenus, and Ti- 'motheus, all forſook the ancient method. The latter until the 'time of Terpander of Antiſſa uſed a lyre with only ſeven ſtrings, but 'afterwards he added to that number. The wind-inſtruments alſo 'received a great alteration; and in general the plainneſs and ſimpli- 'city of the ancient muſic was loſt in that affected variety which 'theſe and other muſicians introduced.'

'In ancient times, when Poetry held the precedency of the other 'arts, the muſicians who played on wind-inſtruments were retained 'with ſalaries by the poets, to aſſiſt thoſe who taught the actors, till 'Menalippides appeared, after which that practice ceaſed.'

* Laſus Charbini from Hermione, a city of Achaia, lived about the 58th Olympiad, in the time of Darius Hyſtaſpes: ſome reckon him among the ſeven wiſe-men, in the room of Periander. He was the firſt who wrote a book concerning muſic, and brought the dithyrambics into the games and exerciſes, where he was a judge or moderator, deciding contentious diſputations. This Laſus was a muſician of great fame, and is mentioned by Plutarch as the firſt who changed any thing in the ancient muſic. Meibom. on Ariſtoxenus, from Suidas.

'Pherecrates

'Pherecrates the comic poet introduces Muſic in the habit of a wo-
'man with her face torn and bruiſed; and alſo Juſtice, the latter of
'whom, demanding the reaſon of her appearing in that condition is
'thus anſwered by Muſic: *

"It is my part to ſpeak and yours to hear, therefore attend to my
" complaints. I have ſuffered much, and have long been oppreſſed
" by that beaſt Menalippides, who dragged me from the fountain of
" Parnaſſus, and has tormented me with twelve ſtrings: to complete
" my miſeries, Cineſian the Athenian, a pretender to poetry, com-
" poſed ſuch horrid ſtrophes and mangled verſes, that I, tortured
" with the pain of his dithyrambics, was ſo diſtorted that you would
" have ſworn that my right ſide was my left: nor did my misfortunes
" end here, for Phrynis, in whoſe brains is a whirlwind, racked me
" with ſmall wires, from which he produced twelve tireſome har-
" monies. But him I blame not ſo much, becauſe he ſoon repented
" of his errors, as I do Timotheus, who has thus furrowed my face,
" and ploughed my cheeks; and Pyrrias the Mileſian, who as I
" walked the ſtreets met me, and with his twelve ſtrings bound and
" left me helpleſs on the earth."

* This Pherecrates the comic poet lived in the time of Alexander the Great, and attended him, as we are told, in his expeditions, [Suid. in Pherecrates] and was contemporary with Ariſtophanes, Plato, Eupolis, and Phrynicus, all comic writers [Id. in Plato.] Phrynis who played on the lyre was the ſon of Cabon, [Id. in Phrynis] and ſcholar of Ariſtocleides, who pretended to be of the family of Terpander, and was a favourite with Hiero king of Sicily, as ſome accounts tell us, which would throw him back near one hundred and fifty years in time before our poet Pherecrates: but if we may believe Plutarch, he ſhould have been a contemporary with the poet at leaſt, if he perſonally contended the muſic prize with Timotheus, with whoſe playing we are told Alexander's ſpirit was ſo raiſed and animated to war. [Suid. in Timotheus.] But may it not be ſaid that Timotheus did contend the prize againſt ſome piece formerly compoſed by Phrynis, as the dramatic poets ſometimes conteſted the priority againſt a play of ſome deceaſed poet? if ſo, Phrynis then might have lived as early as the period mentioned by Suidas.

It is true indeed Plutarch, where he gives us this point of hiſtory, does not mention Phrynis by name, but diſtinguiſhes him only as the ſon of Cabon, and by his nickname Ιωνοκαμπτης, Ionocamptes; which ſarcaſtical addition he obtained, becauſe by his effeminate modulations he had corrupted the old muſic in the like manner as the Ionic movements had debauched the old maſculine dances. Jul. Pollux, lib. IV. cap. ix. § 66.

The ſame Phrynis is likewiſe rallied by Ariſtophanes [in Nubibus, v. 967] and others of the comic poets, for the levity of his compoſitions, and for overdoing every thing in his performance. He was marked out, even to infamy, for his innovations in muſic; for his ſoft and affected modulations, which were ſo abhorrent from the ſimplicity of the ancient muſic; for his intermingling and confounding the modes; and for debaſing the ſcience to paraſitiſm and ſervile offices.

'That

'That virtuous manners are in a great meaſure the effect of a well-
'grounded muſical education, Ariſtoxenus has made apparent. He
'mentions Teleſias the Theban, a contemporary of his, who being
'a youth, had been taught the nobleſt excellencies of muſic, and
'had ſtudied the beſt Lyric poets, and withal played to perfection on
'the flute; but being paſt the prime of his age, he became infa-
'tuated with the corrupted muſic of the theatres, and the innova-
'tions of Philoxenus and Timotheus; and when he laboured to com-
'poſe verſes, both in the manner of Pindar and of Philoxenus, he
'could ſucceed only in the former, and this proceeded from the truth
'and exactneſs of his education; therefore if it be the aim of any
'one to excel in muſic, let him imitate the ancients; let him alſo
'ſtudy the other ſciences, and make philoſophy his tutor, which
'will enable him to judge of what is decent and uſeful in muſic.

'The genera of muſic are three, the diatonic, the chromatic, and
'enarmonic; and it concerns an underſtanding artiſt to know which
'of theſe three kinds is the moſt proper for any given ſubject of
'poetry.

'In muſical inſtitution the way has ſometimes been for the tutor
'firſt to conſider the genius and inclination of the learner, and then
'to inſtruct him in ſuch parts of the ſcience as he ſhould diſcover
'moſt affection for; but the more prudent ſort, as the Lacedemo-
'nians of old, the Mantinæans, and Pellenians rejected this method.'

Here the diſcourſe of Soterichus grows very obſcure, and has a reference to terms of which a modern can entertain no idea. Farther on he reſumes the conſideration of the genera, which heſpeaks of to this effect.

'Now then, there being three genera of harmony, equal in the
'quantity of ſyſtems or intervals, and number of tetrachords, we
'find not that the ancients diſputed about any of them except the
'enarmonic, and as to that they differed only about the interval call-
'ed the diapaſon.'

The ſpeaker, by whom all this while we are to underſtand Soterichus, then proceeds to ſhew that a mere muſician is an incompetent judge of muſic in general; and to this purpoſe he aſſerts that Pythagoras rejected the judgment of muſic by the ſenſes, and maintained that the whole ſyſtem was included in the diapaſon. He adds, that the later muſicians had totally exploded the moſt noble of the modes;

that they made hardly the leaſt account of the enarmonic intervals, and were grown ſo ignorant as to believe that the enarmonic dieſis did not fall within the apprehenſion of ſenſe.

He then enumerates the advantages that accrue from the uſe of muſic, and cites Homer to prove its effects on Achilles in the height of his fury againſt Agamemnon: he ſpeaks alſo of a ſedition among the Lacedemonians, which Terpander appeaſed by the power of his muſic; and a peſtilence among the ſame people, which Thales the Cretan ſtopped by the ſame means.

Oneſicrates, who hitherto appears to have acted the part of a moderator in this colloquy, after beſtowing his commendations both on Lyſias and Soterichus, addreſſes them in theſe terms.

'But for all this, my moſt honoured friends, you ſeem to have 'forgotten the chief of all muſic. Pythagoras, Archytas, Plato, and 'many others of the ancient philoſophers maintain that there could 'be no motion of the ſpheres without muſic, ſince that the ſupreme 'Deity conſtituted all things harmoniouſly; but now it would be un-'ſeaſonable to enter upon a diſcourſe on that ſubject.'

And ſo ſinging a hymn to the Gods and the Muſes, Oneſicrates diſmiſſes the company.

Thus ends the Dialogue of Plutarch on muſic, which though a celebrated work of antiquity, is in the judgment of ſome perſons rendered ſtill more valuable by the paſſage from Pherecrates, which he has introduced into it. The leaſt that can be ſaid of which is, that without a comment it is next to impoſſible to underſtand it: the following remarks, which were communicated to the late Dr. Pepuſch by a learned but anonymous correſpondent of his, may go near to render it in ſome degree intelligible.

'The poet, ſpeaking of the ſucceſſive abuſes of muſic, mentions 'firſt Phrynis, and afterwards Timotheus; ſo that Phrynis ſhould 'ſeem to have led the way to the abuſes which Timotheus is repre-'hended for, or rather gave into, to the prejudice of muſic; and it is 'probable he did ſo, from a ſpeech of Agis made to Leonidas, which 'is tranſmitted to us by Plutarch in the life of Agis.

'What we want the explanation of, is that paſſage of Pherecrates 'which relates to the five ſtrings and the twelve harmonies.

'From the time of Terpander, and upwards, we know that the 'lyre had ſeven ſtrings, and thoſe adjuſted to the number of the

'ſeven planets, and as ſome ſuppoſe to their motions alſo. For 'though Euphorion in Athenæus is made to ſay, that the uſe of the 'inſtruments with many ſtrings was of very great antiquity, yet the 'lyre was reckoned complete, and to have attained the full meaſure 'of perfect harmony when it had ſeven ſtrings; becauſe, as Ariſtotle 'obſerved, the harmonies conſiſted in the number of chords, and be-'cauſe that was the number of old uſed.

'And therefore when Timotheus added four ſtrings to the former 'ſeven, that innovation was ſo offenſive to the Lacedemonians, that 'he was formally proſecuted for the preſumption; and it was one of 'the cauſes for which they were ſaid to have baniſhed him their 'ſtate. The edict by which they did ſo, ſtill extant, is tranſmitted 'to us as a curioſity by Boetius *; ſome however have ſaid that Ti-'motheus cleared himſelf from this ſentence by producing a very 'ancient ſtatue of Apollo found at Lacedæmon, holding a lyre with 'nine ſtrings †. But if he avoided this ſentence of baniſhment, he did 'not wholly eſcape cenſure; for Pauſanias, who wrote as early as 'Athenæus, tells us where the Lacedæmonians hung up his lyre pub-'licly, having puniſhed him for ſuperadding four ſtrings, in com-'poſitions for that inſtrument, to the ancient ſeven; and Plutarch 'likewiſe tells us that before this, when the abovementioned Phry-'nis was playing on the lyre at ſome public ſolemnity, one of the 'Ephori, Ecprepes by name, taking up a knife, aſked him on which 'ſide he ſhould cut off the ſtrings that exceeded the number of 'nine ‡.

* Boetius, in his treatiſe De Muſica, lib. I. cap. i. has given it in the original Greek; and the author of a book lately publiſhed, entitled Principles and Power of Harmony, has given the following tranſlation of it.

Whereas Timotheus, the Mileſian, coming to our city, has deformed the ancient muſic; and laying aſide the uſe of the ſeven-ſtringed lyre, and introducing a multiplicity of notes, endeavours to corrupt the ears of our youth by means of theſe his novel and complicated conceits, which he calls chromatic, by him employed in the room of our eſtabliſhed, orderly, and ſimple muſic; and whereas, &c. It therefore ſeemeth good to us the King and Ephori, after having cut off the ſuperfluous ſtrings of his lyre, and leaving only ſeven thereon, to baniſh the ſaid Timotheus out of our dominions, that every one beholding the wholeſome ſeverity of this city, may be deterred from bringing in amongſt us any unbecoming cuſtoms, &c.

† Caſaub. ad Athenæum, lib. VIII. cap. xi.

‡ This fact is alluded to by Agis king of Sparta, in a ſpeech of his to Leonidas, thus recorded by Plutarch.

'And you that uſe to praiſe Ecprepes, who being Ephore, cut off two of the nine ſtrings 'from the inſtrument of Phrynis the muſician, and to commend thoſe who did afterwards

'imitate

'But though theſe innovations of Timotheus were ſaid to be ſo 'offenſive to the Lacedæmonians, it was not the firſt time of their 'having been put in practice; for Phrynis had before done the like, 'and been puniſhed, as we ſhall find, in the ſame manner.

'Theſe accounts therefore go thus far towards an explanation of 'one part of the paſſage before us; that as to the five ſtrings, we may 'be pretty certain that the lyre of Phrynis was not confined to that 'number, nay we have particular teſtimonies that Phrynis himſelf 'was noted for playing on the lyre with more than ſeven ſtrings; 'the ſyſtem of the lyre, from the time of Terpander to that of Phry-'nis, had continued altogether ſimple and plain, but Phrynis begin-'ning to ſubvert this ſimplicity by adding two ſtrings to his inſtru-'ment, we are told by Plutarch, in more than one paſſage, that Ec-'prepes the magiſtrate cut of two off his nine ſtrings *.'

'The next thing therefore to be enquired into, is what the poet 'could mean by playing twelve harmonies on five ſtrings?

'Perhaps by Harmonies we are to underſtand Modes; and if ſo, 'Phrynis may be ridiculed for ſuch a volubility of hand, and ſuch an 'affectation of variety, that he extracted a dozen tones from five 'ſtrings only, or that he played over the whole twelve modes within 'that compaſs. For beſides the ſeven principal modes, it is ſaid 'that Ariſtoxenus by converting five ſpecies of the diapaſon, intro-'duced five other ſecondary modes; and that the intermingling of 'the modes is the ſenſe of ἁρμονιας here, ſeems plain from another 'paſſage in Plutarch ‡, where he ſays, "That it was not allowed "to compoſe for the lyre formerly, as in his time, nor to intermingle "the modes ἁρμονιας and meaſures of time, for they obſerved one and "the ſame caſt peculiar to each diſtinct mode, which had therefore "a name to diſtinguiſh it by; they were called Νομοί or rules and li-"mitations, becauſe the compoſers might not tranſgreſs or alter the "form of time and meaſure appointed to each one in particular."

'imitate him in cutting the ſtrings of Timotheus's harp, with what face can you blame me 'for deſigning to cut off ſuperfluity and luxury from the commonwealth? Do you think 'thoſe men were ſo concerned only about a fiddle-ſtring, or intended any thing elſe than 'by checking the voluptuouſneſs of muſic, to keep out a way of living which might deſtroy 'the harmony of the city? Plutarch in Vitâ Agidis.'

† Vide the laſt preceding note, and Plutarch in Laconic. Inſtitutio.

‡ De Muſica.

'For we are certain that both the Athenians and Lacedæmonians 'had their laws by which the particular ſpecies of muſic were de- 'ſigned to be preſerved diſtinct and unconfuſed; and their hymns, 'threni, pæans, and dithyrambs kept each to their ſeveral ſort of ode; 'and ſo the compoſers for the lyre were not permitted to blend one 'melody with another, but they who tranſgreſſed were cenſured and 'fined for it.'

It has already been mentioned that the genuineneſs of this dialogue has been queſtioned, ſome writers affirming it to be a ſpurious production, and others contending it to be a genuine work of Plutarch, worthy of himſelf, and in merit not inferior to the beſt of the treatiſes contained in the Sympoſiacs. It is therefore neceſſary to take a view of the controverſy, and to ſtate the arguments of the contending parties in ſupport of their ſeveral opinions. It ſeems that the original ground of this diſpute was a note prefixed to Amyot's French tranſlation of this dialogue in the following words: 'Ce traité n'appartient 'point, ou bien peu à la muſique de pluſieurs voix accordées & entre- 'lacées enſemble, qui eſt aujourd'hui en uſage; ains à lafaçon ancienne, 'qui conſiſtoit en la convenance du chant avec le ſens & la meſure de 'la lettre, & la bonne grace du geſte; & le ſtyle ne ſemble point 'être de Plutarque.'

Amyot's tranſlation bears date in 1610; notwithſtanding which, Fabricius, in his catalogue of the writings of Plutarch, has mentioned this diſcourſe without ſuggeſting the leaſt doubt of its authenticity *. But a diſpute having ariſen in the French Academy of Inſcriptions and Belles Lettres, on the queſtion, whether the ancients were acquainted with muſic in conſonance or not, this tract of Plutarch, in which there is not the ſlighteſt mention of any ſuch practice, was urged in proof that they were ſtrangers to it. While a doubt remained of the genuineneſs of this diſcourſe, its authority could not be deemed concluſive; thoſe who maintained the affirmative of the principal queſtion, therefore inſiſted on the objection raiſed by Amyot; and this produced an enquiry into the ground of it, or, in other words, whether Plutarch was really the author of that diſcourſe on muſic which is generally aſcribed to him or not: this enquiry is contained in three papers written by Monſieur Burette, and inſerted in the Me-

* Biblioth. Græc. lib. IV. cap. xi. pag. 364, N. 124.

moirs

moirs of the abovementioned Academy, tome onzieme, Amſt. 1736, with the following titles, Examen du Traité de Plutarque ſur la Muſique—Obſervations touchant l'Hiſtoire litteraire du Dialogue de Plutarque ſur la Muſique—Analyſe du Dialogue de Plutarque ſur la Muſique, the publication whereof has put an end to a queſtion, which but for Amyot had probably never been ſtarted.

Meibomius, in the general preface to his edition of the muſical writers, and Doni are laviſh in their commendations of this treatiſe: the latter of them, in his diſcourſe De Præſtantia Muſicæ Veteris, pag. 65, calls it a golden little work; but whether it merits ſuch an encomium muſt be left to the judgment of ſuch as can truly ſay they underſtand it. As to the hiſtorical part, it is undoubtedly curious, except in ſome inſtances, that ſeem to approach too near that ſpecies of hiſtory which we term fabulous, to merit any great ſhare of attention; but as to that other wherein the author profeſſes to explain the nature of the ancient muſic, it is to be feared he is much too obſcure for modern comprehenſion. The particulars moſt worthy of obſervation in this work of Plutarch are, the perpetual propenſity to innovation, which the muſicians in all ages ſeem to have diſcovered, and the extreme rigour with which thoſe in authority have endeavoured to guard againſt ſuch innovations: the famous decree of the Ephori againſt Timotheus juſt mentioned, which ſome how or other was recovered by Boetius, and is inſerted in a preceding note, is a proof that the ſtate thought itſelf concerned in preſerving the integrity of the ancient muſic; and if it had ſo great an influence over the manners of the Spartan youth, as in the above treatiſe is ſuggeſted, it was doubtleſs an object worthy their attention.

CHAP.

CHAP. VIII.

ARISTIDES QUINTILIANUS is ſuppoſed to have flouriſhed, A. C. 110. this is certain that he wrote after Cicero, for from his books De Republica he has abridged all the arguments that Cicero had advanced againſt muſic, and has oppoſed them to what he urged in behalf of it in his oration for Roſcius. It is farther clear that Ariſtides muſt have been prior to Ptolemy, for he ſpeaks of Ariſtoxenus who admitted of thirteen modes, and of thoſe who after him allowed of fifteen, but he takes no notice of Ptolemy who reſtrained the number of them to ſeven. His treatiſe De Muſica conſiſts of three books. The firſt contains an ample diſcuſſion of the doctrine of the modes: ſpeaking of the diagram by which the ſituation and relation of them is explained, he ſays it may be delineated in the form of wings, to manifeſt the difference of the tones among themſelves; but he has given no repreſentation of it.

All that has been hitherto ſaid of the modes is to be underſtood of melody, for there is another and to us a more intelligible ſenſe of the word, namely that, where it is applied to the proportions of time, or the ſucceſſion and different duration of ſounds, of which whether they are melodious, or ſuch as ariſe from the ſimple percuſſion of bodies, the modes of time, for by that appellation we chuſe to diſtinguiſh them from the modes of tone, are as ſo many different meaſures. The effect of the various metrical combinations of ſounds it undoubtedly what the ancients, more particularly this author, meant by the word Rythmus. Of time he ſays there are two kinds, the one ſimple and indiviſible, reſembling a point in geometry; the other compoſite, and that of different meaſures, namely, duple, treble and quadruple *. The rythmic ge-

* This paſſage in Ariſtides Quintilianus has drawn on him a ſevere cenſure from the late Dr. Pemberton, the Greſham profeſſor of phyſic, who ſays that he here endeavours to make out four different meaſures of time in verſe alſo. This ſays the Dr. is talking nonſenſe. But, adds he, this writer is apt to amuſe himſelf with fanciful reſemblances; and having firſt imagined I know not what analogy between theſe four meaſures of time, and the four dieſes, into which a tone was conſidered as diviſible, he muſt needs try at making out the like in relation to words. Obſervations on Poetry eſpecially the Epic. Lond. 1738. page 110.

nera

nera he makes to be three in number, namely, the equal, the ſeſquialteral, and the duple; others he ſays add the ſupertertian: theſe are conſtituted from the magnitude of the times; for one compared to itſelf begets a ratio of equality, two to one is duple, three to two is ſeſquialteral, and four to three ſupertertian: He ſpeaks of the elation and poſition of ſome part of the body, the hand or foot perhaps, as neceſſary to the rythmus, probably as a meaſure; and this correſponds with the practice of the moderns in the meaſuring of time by the tactus or beat. The remainder of the firſt book of this work of Quintilian contains a very laborious inveſtigation of meaſures, with all their various inflexions and combinations, in which the author diſcovers a profound knowledge.

The ſecond book treats of muſic as a means to regulate the external behaviour, as that of philoſophy is to improve the mind. Muſic, he ſays, by its harmony poliſhes the manners, and its rythmus renders the body more agreeable; for youth being impatient of mere admonition, and capable of inſtruction by words alone, require ſuch a diſcipline as without diſturbing the rational part of their natures ſhall familiarly and by degrees inſtruct them: he adds that it is eaſily perceived that all boys are prompt to ſing and ready for briſk motions, and that it is not in the power of their governors to hinder them from the pleaſure which they take in exerciſes of this ſort. In human things, continues this author, there is no action performed without muſic; it is certain that divine worſhip is rendered more ſolemn by it, particular feaſts and public conventions of cities rejoice with it, wars and voyages are excited by it, the moſt difficult and laborious works are rendered eaſy and delightful by it, and we are excited to the uſe of muſic by divers cauſes. Nor are its effects confined to the human ſpecies; irrational animals are affected by it, as is plain from the uſe which is made of pipes by ſhepherds, and horns by goatherds. Of the uſe of muſic in war, as practiſed by the ancients, he has the following paſſage: 'Numa has ſaid, that by muſic he corrected 'and refined the manners of the people, which before were rough 'and fierce: to that end he uſed it at feaſts and ſacrifices. In the 'wars where it is and will be uſed, is there any need to ſay how the 'Pyrrhic muſic is a help to martial diſcipline? certainly it is plain 'to every one, and that to iſſue commands by words in time of 'action would introduce great confuſion, and might be dangerous by

'their being made known to the enemies, if they were ſuch as uſe 'the ſame language. To the trumpet, that martial inſtrument, a 'particular cantus or melody is appropriated, which varies according 'to the occaſion of ſounding it, ſo as for the attack by the van or either 'wing, or for a retreat, or whether to form in this or that particular 'figure, a different cantus is requiſite; and all this is ſo ſkilfully 'contrived, as to be unintelligible to the enemy, though at the 'ſame time by the army it is plainly underſtood.'

Thus much of this author is intelligible enough to a reader of this time; but when he ſpeaks, as he does immediately after, of the efficacy of muſic in quieting tumults and appeaſing an incenſed multitude, it muſt be owned his reaſoning is not ſo clear: as little can we conceive any power in muſic over the iraſcent and concupiſcent affections of the mind, which he aſſerts are abſolutely under its dominion. The remainder of this ſecond book conſiſts of a chain of very abſtruſe reaſoning on the nature of the human ſoul, no way applicable to any conception that we at this time are able to form of muſic, and much too refined to admit of a place in a work, in which it is propoſed not to teach, but to deliver a hiſtory of, the ſcience.

The third book contains a relation of ſome experiments made with ſtrings, diſtended by weights in given proportions, for finding out the ratios of conſonances; a method which this author ſeems to approve; and to recommend this practice, he cites the authority of Pythagoras, who he ſays, when he departed this life, exhorted his diſciples to ſtrike the monochord, and thereby rather inform their underſtandings than truſt to their ears in the meaſure of intervals. He ſpeaks alſo of an inſtrument for the demonſtration of the conſonances, called a helicon, which was of a ſquare form, and on which were ſtretched, with an equal tenſion, four ſtrings *. For the reaſon above given, it ſeems no way neceſſary to follow this author through that ſeries of geometrical reaſoning, which he has applied for the inveſtigation of his ſubject in the ſucceeding pages of his book, wherefore a paſſage relating to the tetrachords, remarkable enough in its kind, ſhall conclude this extract from his very learned but abſtruſe work.

'The tetrachords are agreed to be five in number, and each 'has a relation to one or other of the ſenſes; the tetrachord hypa-'ton reſembles the touch, which, is affected in new-born infants,

* See it in a ſubſequent chapter of this ſecond book.

'when

'when they are impelled by the cold to cry. The tetrachord 'meſon is like the taſte, which is neceſſary to the preſervation 'of life, and hath a ſimilitude to the touch. The third, called 'ſynnemenon, is compared to the ſmell, becauſe this ſenſe is allied 'to the taſte; and many, as the ſons of art ſay, have been reſtored 'to life by odours. The fourth tetrachord, termed diezeugmenon, is 'compared to the hearing, becauſe the ears are ſo remote from the 'other organs of ſenſe, and are disjoined from each other. The 'tetrachord hyperboleon is like the ſight, as it is the moſt acute of 'the ſyſtems, as the ſight is of the ſenſes.' Farther, this author tells us that 'the five tetrachords do in like manner anſwer to the five 'primary elements, that is to ſay, hypaton to the earth, as the moſt 'grave; meſon to the water, as neareſt the earth; ſynnemenon to 'the air, which paſſes through the water remaining in the profun-'dities of the ſea and the caverns of the earth, and is neceſſary for 'the reſpiration of animals, which could not live without it; die-'zeugmenon to the fire, the motion whereof, as tending upwards, 'is againſt nature; laſtly, the tetrachord hyperboleon anſwers to 'the æther, as being ſupreme and above the reſt.' There are, he ſays, alſo analogies between the three ſeveral ſyſtems of diapente and the ſenſes; but we haſten to diſmiſs this fanciful doctrine. Moreover, adds he, 'in diſcourſing of the human ſoul, ſyſtems are 'not improperly compared to the virtues. Hypaton and meſon are 'to be attributed to temperance, the efficacy whereof is double, and 'conſiſts in an abſtinence from unlawful pleaſures, reſembling the 'moſt grave of theſe two ſyſtems; as alſo in a moderate uſe of law-'ful enjoyments, not improperly ſignified by the tetrachord meſon; 'but the tetrachord ſynnemenon is to be attributed to juſtice, which 'being joined with temperance, exerts itſelf in the diſcharge of pub-'lic duties, and in acts of private beneficence: the diezeugmenon has 'the reſemblance of fortitude, which virtue delivers the ſoul from 'the dominion of the body; laſtly, the hyperboleon emulates the 'nature of prudence, for that tetrachord is the end of the acumen, 'and this virtue is the extremity of goodneſs. Again, theſe virtues 'may be aſſimilated to the three ſyſtems of diapente *; the two firſt, 'juſtice and temperance, which are always placed together as being a

* The varieties or different ſyſtems of diapente are four, and therefore it may be queſtioned why in this place the author has limited them to three.

'check to the concupiſcent part of the mind, reſemble the firſt of 'theſe ſyſtems; fortitude may be compared to the ſecond, as that 'virtue denotes the iraſcent part and refers to each of our two na-'tures; and prudence to the third, as declaring the rational eſſence. 'Add to this, that the two ſpecies of diapaſon anſwer to the twofold 'diviſion of the mind; the firſt reſembling the irrational, and the 'ſecond the rational part thereof.'

It has been remarked of Quintilian that he is extremely fond of analogies, vide pag. 222, in a note; and the above paſſages are a proof that this charge againſt him is not ill grounded.

ALYPIUS, the next in ſucceſſion of the authors now remaining to him above cited, or, as ſome ſuppoſe, a contemporary of his, as flouriſhing about A. C. 115*, compiled a work entitled an Introduction to Muſic, which ſeems to be little elſe than a ſet of tables explaining the order of the ſounds as they ariſe in the ſeveral modes of their reſpective genera in the ancient method of notation. The muſical characters uſed by the ancients were arbitrary; they were nothing more than the Greek capitals mutilated, inverted, and variouſly contorted, and are eſtimated at no fewer than twelve hundred and forty. A ſpecimen of them is herein before inſerted in two plates from Kircher.

MANUEL BRYENNIUS, another of the Greek writers on muſic, is ſuppoſed to have flouriſhed under the elder Palæologus, viz. about the year of Chriſt 120. He wrote three books on harmonics, the firſt whereof is a kind of commentary on Euclid, as the ſecond and third are on Ptolemy †. He profeſſes to have ſtudied perſpicuity for the ſake of young men, but has given very little more than is to be found in one or other of the above authors. Meibomius had given the public expectations of a tranſlation of this work, but not living to complete it, Dr. Wallis undertook it, and it now makes a part of the third volume of his works, publiſhed at Oxford in three volumes in folio, 1699.

BACCHIUS SENIOR was a follower of Ariſtoxenus; Fabricius ſuppoſes him to have been tutor to the emperor Marcus Antoninus, and conſequently to have lived about A. C. 140‡. He wrote in Greek a very ſhort introduction to muſic in dialogue, which, with a Latin tranſlation thereof, Meibomius has publiſhed. It ſeems it was firſt

* Fabr. Biblioth. Græc. lib. III. cap. x. † Ibid. ‡ Ibid.

pub-

publiſhed in the original by Merſennus, in his Commentary on the ſix firſt chapters of Geneſis; and that afterwards he publiſhed a tranſlation of it in French, which Meibomius, in the preface to his edition of the ancient muſical authors, cenſures as being groſsly erroneous.

GAUDENTIUS the philoſopher, according to Fabricius *, ſeems to have written before Ptolemy, and treading in the ſteps of Ariſtoxenus, compoſed an introduction to harmonics, which Caſſiodorus commends as an elegant little work; though he does not pretend to ſay who he was, or where he lived; however upon his authority Caſſiodorus relates that Pythagoras found out the original precepts of the art by the ſound of hammers and the percuſſion of extended chords; and indeed as to this matter Gaudentius is very explicit. For his work in general, excepting a few definitions and a repreſentation of the muſical characters in the method of Alypius, it is little more than an abridgment of Ariſtoxenus, and that ſo very ſhort and obſcure, that little advantage can be derived from the peruſal of it.

CLAUDIUS PTOLEMEUS was an Egyptian, born at Peluſium; not one of the Ptolemies kings of Egypt, with ſome one of whom he has been confounded; nor the ſame with Ptolemy the mathematician and aſtronomer, who, as Plutarch relates in his life of Galba, was the conſtant companion of that emperor and was alſo attendant on the emperor Otho in Spain, and foretold that he ſhould ſurvive Nero, as Tacitus tells us, lib. I. cap. xxii. The Ptolemy here ſpoken of flouriſhed in the reign of the emperor Marcus Aurelius Antoninus, as Suidas teſtifies; and alſo himſelf in his Magnæ Syntaxis, where he ſays that he drew up his aſtronomical obſervations at Alexandria, for which reaſon he is by Suidas and others called Alexandrinus, in the ſecond year of Antoninus Pius, which anſwers to the year of Chriſt 139†. He was the author of a treatiſe on harmonics in three books, a work much more copious than any of thoſe above-mentioned; and it muſt be allowed that he of all the ancient writers ſeems to have entred the moſt deeply into the ſubject of harmonics. In the firſt chapter of his firſt book, he aſſigns the criteria of harmony, which he makes to be ſenſe and reaſon: the former of theſe, he ſays, finds out what is nearly allied to truth, and approves of what is accurate, as the latter finds out what is accurate and approves of what is

* Biblioth. Græc. lib. III. cap. x. † Ibid. cap. xiv.

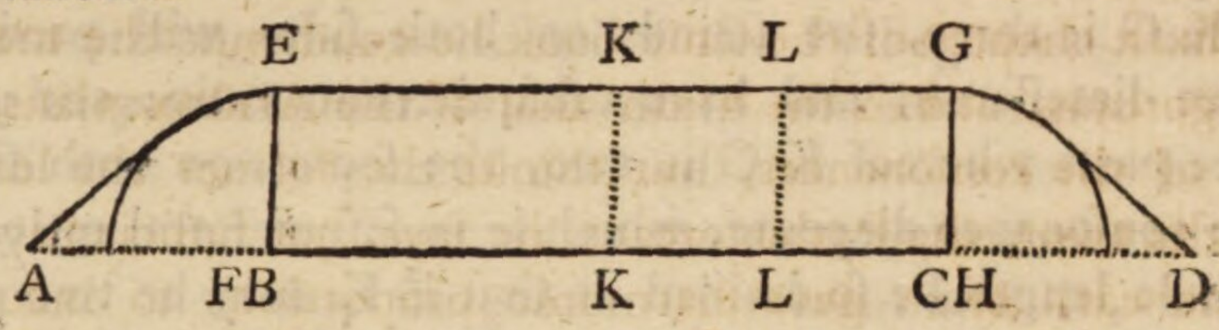
nearly allied to truth. Chap. iii. ſpeaking of the cauſes of acuteneſs and gravity, he takes occaſion to compare the wind-pipe to a flute; and to remark as a ſubject of wonder, that power or faculty which enables a finger readily and inſtantaneouſly to hit thoſe degrees of dilatation and contraction as are neceſſary to produce ſounds, grave or acute, in any given proportion.

In the ſixth chapter of the ſame book he condemns the method of the Pythagoreans, and in the ninth that of the Ariſtoxenians, in the adjuſting of the conſonances, but thinks the former the leaſt erroneous of the two: the Pythagoreans, he ſays, not ſufficiently attending to the ear, often gave harmonic proportions to incongruous ſounds; on the contrary, the Ariſtoxenians, aſcribing all to the ear, applied numbers, the images of reaſon, not to the differences of ſounds, but to their intervals. To correct the errors of theſe two very different methods, he contrived an inſtrument very ſimple and inartificial in its conſtruction, but of ſingular uſe in the adjuſting of ratios, which though in truth but a monochord, as conſiſting of one ſtring only, he with great propriety called the Harmonic Canon, by which appellation it is conſtantly diſtinguiſhed in the writings of ſucceeding authors. His deſcription of the inſtrument and its uſe, as alſo the reaſons that led him to the invention, are contained in the eighth chapter of the ſame firſt book, and are to the following effect:

'We omit to explain what is propoſed, by the means of pipes or 'flutes, or by weights affixed to ſtrings, becauſe they cannot make 'the neceſſary demonſtrations with ſufficient accuracy, but would ra-'ther occaſion controverſy; for in pipes and flutes, as alſo in the 'breath which is injected into them, there is great diſorder; and as 'to ſtrings with weights affixed to them, beſides that of a number 'of ſuch ſtrings, we can hardly be ſure that they are exactly equal 'in ſize, it is almoſt impoſſible to accommodate the ratios of the 'weights to the ſounds intended to be produced by them; for with 'the ſame degree of tenſion two ſtrings of different thickneſs would 'produce ſounds differently grave or acute: and farther, which is 'more to the preſent purpoſe, a ſtring, at firſt of an equal length to 'others, by the affixing to it a greater weight than is affixed to the 'reſt, becomes a longer ſtring, from whence ariſes another difference 'of ſound beſides what might be deduced from the ratio of weight 'alone. The like will happen in ſounds produced from hammers or

'quoits

'quoits of unequal weights; and we may obſerve the ſame in ſome 'veſſels that are firſt empty, and afterwards filled; and certainly it 'is difficult in all theſe caſes to provide againſt the diverſity of 'matter and figure in each; but in the canon, as I term it, the chord 'moſt readily and accurately demonſtrates the ratios of the ſeveral 'conſonances.'

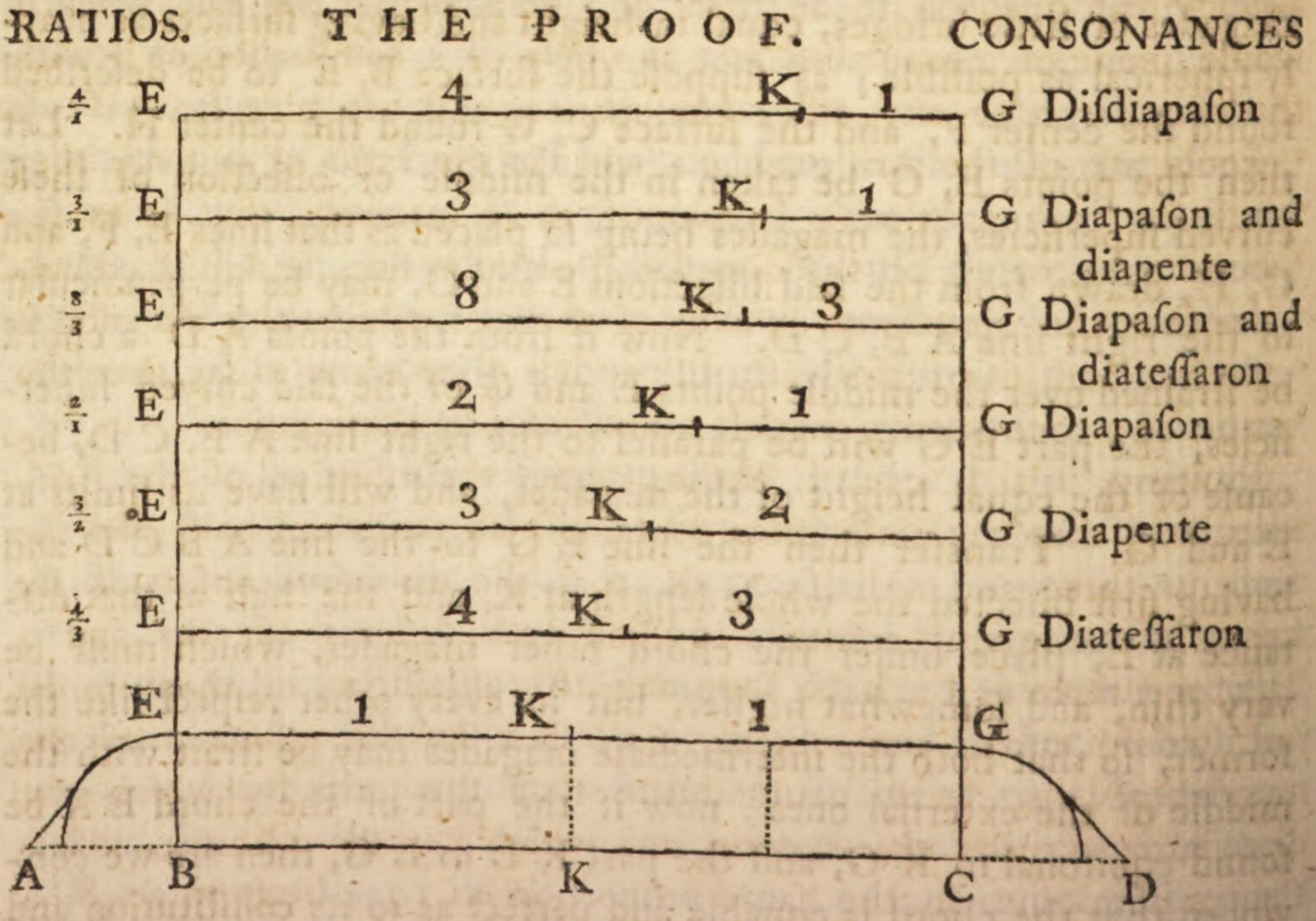


A B C D The line of the canon.
A E G D The chord.
A E, G D The ligament or place where it is faſtened.
E B, G C Perpendiculars of the immoveable magades or bridges.
K K, L L The moveable magades.
B K, L C The canon or rule divided.

Suppoſe A B C D to be a right line, at each end thereof apply magades or little bridges, equal in height and having ſurfaces as nearly ſpherical as poſſible; as ſuppoſe the ſurface B, E to be deſcribed round the center F, and the ſurface C, G round the center H. Let then the points E, G be taken in the middle or biſection of theſe curved ſuperficies, the magades being ſo placed as that lines E, F, and G, H, drawn from the ſaid biſections E and G, may be perpendicular to the right line A B, C D. Now if from the points A D a chord be ſtrained over the middle points E and G of the ſaid curved ſuperficies, the part E G will be parallel to the right line A B, C D, becauſe of the equal height of the magades, and will have its limits at E and G. Transfer then the line E G to the line A B C D and having firſt biſected the whole length at K, and the half of that diſtance at L, place under the chord other magades, which muſt be very thin, and ſomewhat higher, but in every other reſpect like the former, ſo that both the intermediate magades may be ſtrait with the middle of the external ones; now if the part of the chord E K be found equitonal to K G, and the part K L to L G, then are we convinced that the chord is equable and perfect as to its conſtitution and make, and conſequently fit for the experiment; but if it ſhould not prove ſo, the trial is to be transferred to another part, or even to a new

chord,

chord, till we obtain this condition of equability under the circumſtances of ſimilar moveable magades, and a ſimilar length and tenſion of the parts of the chord. This being done and the chord divided according to the proportions of the conſonances, we ſhall by the application of the moveable magades prove by our ears the ratios of correſponding ſounds; for giving to the diſtance E K four of ſuch parts whereof K G is three, the ſounds on both ſides will produce the conſonance diateſſaron, and have a ſeſquitertian ratio; and giving to E K three parts whereof K G is two, the ſounds on both ſides will make the conſonance diapente, which is in ſeſquialteral ratio. Again, if the whole length be ſo divided as that E K may be two parts and K G one of them, it ſhall be the uniſon diapaſon, which conſiſts in a duple ratio. If it be ſo that E K be eight parts whereof K G is three, it will be the conſonance diapaſon and diateſſaron, in the ratio of eight to three; farther if it be divided ſo as that E K be three parts and K G one of them, it will be diapente and diapaſon, in a triple ratio; and laſtly if it be ſo divided as that E K be four and K G one, it will be the uniſon diſdiapaſon in a quadruple ratio.



How the monochord of Pythagoras was conſtructed, or in what manner he divided it, we are no where told: it ſeems difficult to conceive

conceive that for producing the conſonances it could be divided in any other manner than this of Ptolemy, and yet this author cenſures the followers of Pythagoras for not knowing how to reaſon about the conſonances, which one would think they could not fail to do from principles ſo clear as thoſe deducible from experiments on the monochord. But as to the Ariſtoxenians, he cenſures them for rejecting the reaſonings of the Pythagoreans, at the ſame time that they would not endeavour to find out better. To underſtand theſe and other invectives againſt this ſect, it is to be obſerved that they meaſured the intervals by the ear as our practical muſicians do now, that is to ſay, the greater by fourths or fifths, and the leſs by tones and ſemitones; thus to aſcertain the meaſure of an octave, they applied that of a diateſſaron or fourth above the uniſon, and another below the octave, and between the approximating extremities of theſe two intervals they found the diſtance of a tone, which furniſhed a common meaſure for the leſs intervals of a fourth, a fifth, and the reſt; and enabled them to ſay that a tone is the difference between the diateſſaron and the diapente: this Ptolemy calls remitting one queſtion to another, and he adds that the ear, when it would judge of a tone needs not the help of a compariſon of it with the diateſſaron or any other conſonance, and yet adds he, 'if we 'would aſk of the Ariſtoxenians what is the ratio of a tone, they 'will ſay perhaps that it is two of thoſe intervals, that is to ſay 'hemitones, of which the diateſſaron contains five, and in like man-'ner that the diateſſaron is five, of thoſe of which the diapaſon is 'twelve, and ſo of the reſt, till at laſt they come to ſay that the 'ratio of a tone is two, which is not defining thoſe ratios.'

Ptolemy, lib. I. cap. x. farther denies the aſſertion of the Ariſtoxenians, that the diateſſaron contains two tones and half, and the diapente three and a half; as alſo that the diapaſon conſiſts of ſix tones, as the ſeveral contents of thoſe two ſyſtems of two and a half, and three and a half, ſuppoſing this eſtimation of them to be juſt, would make undoubtedly ſix; but by his diviſion of the monochord, he clearly demonſtrates that the term by which the diateſſaron exceeds the diatone, and which he calls a limma, is leſs than a hemitone, in the ſame proportion as 1944 bears to 2048, a difference however much too ſmall for the ear to diſtinguiſh. His demonſtration

monſtration of this propoſition is given in a preceding chapter of this work.

To enter into a diſcuſſion of that very abſtruſe ſubject, the diviſion of the diapaſon, would require a much more minute inveſtigation of the doctrine of ratios than is requiſite in this place; it muſt however be obſerved, that ſuppoſing the ear alone to determine the preciſe limits of any ſyſtem, that of the diateſſaron for example, and that ſuch ſyſtem were transferred to the monochord, a repetition of the ſyſtem ſo transferred would fail to produce a ſeries of ſyſtems conſonant in the extremities. Thus let a given ſound be, as we ſhould now call it G, and let the monochord be divided by a bridge according to the rules above preſcribed, ſo as to give its fourth C; and let a tone, D, be ſet on by another bridge in like manner, and after that another fourth, which would terminate at G, and would ſeem to make what we ſhould call a diapaſon: we ſhould find upon taking away the intermediate bridges at C and D, that the interval from G to G would be more than a diapaſon; and that were this method of aſcertaining the terms of the conſonances repeated through a ſeries of octaves, the diſſonance would be increaſed in proportion to the number of repetitions. Ptolemy has taken another method, chap. xi. of this his firſt book, and by an accumulation of ſeſquioctave tones has clearly demonſtrated that ſix ſuch, exceed the conſonance diapaſon. This deficiency, if it may be ſo called, in the intervals of which the diapaſon is compounded, and the difference between tuning by the ear and by numbers, has ſuggeſted to mathematicians what is called a temperament, which propoſes a certain number of integral parts for the limit of the diapaſon, and the diviſion of the amount of the ſeveral limmas that occur in the progreſſion to it, in ſuch a manner as to make the conſonances contained in it as nearly perfect as poſſible.

The remainder of Ptolemy's firſt book treats of the genera. Chap. xii. exhibits the diviſion of Ariſtoxenus, which he condemns; and chap. xiii. that of Archytas of Tarentum, whom he cenſures for defining the genera by the interjacent intervals rather than by the ratios of the ſounds among themſelves, and charges him with raſhneſs and want of thought.

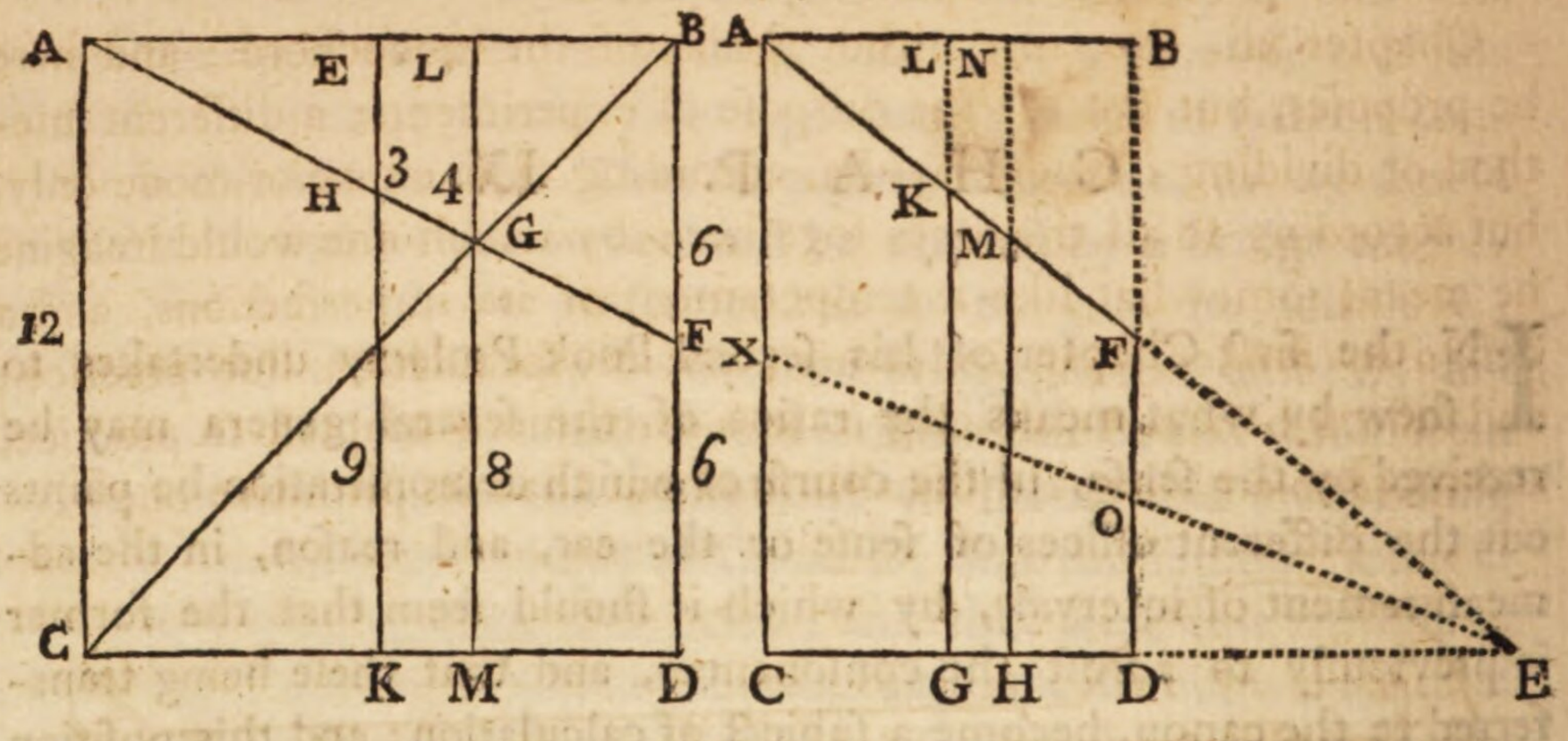
The uſe and application of the genera is at this day ſo little underſtood, that we are greatly at a loſs to account for any other diviſion of the

the tetrachord than that which characterizes the diatonic genus: Nor does it ſeem poſſible, with the utmoſt ſtrength of the imagination, to conceive how a ſeries of ſounds ſo extremely ungrateful to the ear as thoſe of which the chromatic and enarmonic genera are ſaid to be formed, could ever be received as muſic in the ſenſe in which that word is now underſtood.

CHAP. IX.

IN the firſt Chapter of his ſecond Book Ptolemy undertakes to ſhew by what means the ratios of the ſeveral genera may be received by the ſenſe, in the courſe of which demonſtration he points out the different offices of ſenſe or the ear, and reaſon, in the admeaſurement of intervals, by which it ſhould ſeem that the former is previouſly to adjuſt the conſonances, and that theſe being transferred to the canon, become a ſubject of calculation: and this poſition of his is undoubtedly true; for the determination of the ſenſes in all ſubjects where harmony or ſymmetry are concerned is arbitrary, and it is the buſineſs of reaſon, aſſiſted by numbers, to enquire whether this determination has any foundation in nature or not; and if it has not, we pronounce it fantaſtical and capricious; for example we perceive by the ear a conſonance between the uniſon and its octave, and we are conſcious of the harmony reſulting from thoſe two ſounds; but little are we aware of the wonderful relation that ſubſiſts between them, or that if an experiment be made by ſuſpending weights to the chords that produce it, whoſe lengths are by the laws of harmony required to be in the proportion of 2 to 1, that the ſhorter would make two vibrations to one of the longer, and that the vibrations would exactly coincide in that relation as long as both chords ſhould continue in motion. Again with reſpect to the forms of bodies, when we prefer that of a ſphere to one leſs regular, we never attend to the properties of a ſphere, but reaſon will demonſtrate a perfection in that figure which is not to be found in an irregular polygon.

In the ſecond chapter of his ſecond book he deſcribes an inſtrument or diagram called the Helicon, invented as it ſhould ſeem by himſelf, for demonſtrating the conſonances, ſo ſimple in its conſtruction that its very figure ſeems to ſpeak for itſelf and to render a verbal explanation, though he has given a very long one of it, unneceſſary. It is of this form



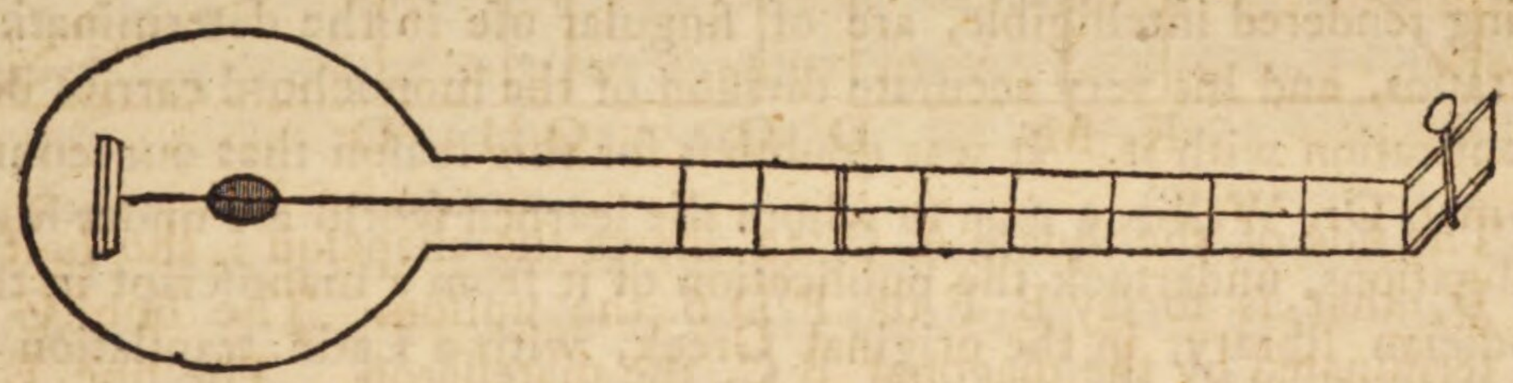
The ſide of the ſquare A C 12 ſhews the diapaſon; the half of B D, that is to ſay B F or F D 6 the uniſon. The line G M 8, terminated by the diagonal B C, the diateſſaron. The line E K divides the quadrangle equally, and H K 9, terminated by the line A F, ſhews the diapente. The lines L G and E H are in the ratio of 4 to 3, which is that of the diateſſaron; and laſtly the lines H K 9 and G M 8 ſhew the ſeſquioctave tone.

To this diagram Ptolemy has added another not leſs eaſy to be comprehended than the former, in which the lines B D, N H, L G, and A C are ſuppoſed to be chords of equal lengths but biſected by the line A F in the direction A E: this line may be ſuppoſed to be a bridge, or ſubductorium, ſtopping the four chords at A K M F, and thereby giving the proportions 12 9 8 6; which proportions will alſo reſult from a ſubductorium placed in the direction X E, for X C will be duple of O D, and the two intermediate chords ſeſquialtera and ſeſquitertia, and with reſpect to each other, ſeſquioctave; in all agreeing with the ratios in the former diagram.

In

In the ninth chapter of book II. Ptolemy takes occaſion to ſay that there are only ſeven tones or modes, for that there are but ſeven ſpecies of diapaſon; a poſition that will be eaſily granted him by the moderns who ſuppoſe the word, tone or mode, when applied to ſound, to anſwer to what we term the key or fundamental note. What he ſays farther concerning the modes has already been mentioned in a preceding chapter of this book.

Chapter xii. the ſame author ſpeaks of the monochord; and here he propoſes, but not for the purpoſe of experiments, a different method of dividing it, not, ſays he, according to one tone or mode only, but according to all the tones together; by which one would imagine he meant ſomewhat like a temperament of its imperfections, and a deſign to render it an inſtrument not of ſpeculation but practice; and indeed beſides exhibiting it in a form more adapted to practice, and more reſembling a muſical inſtrument than its primitive one *.



He ſpeaks, though not very intelligibly, of the manner of performing on it, and recommends to conceal its defects the conjunction with it, either of a pipe or the voice. A little after, he ſpeaks of Didymus a muſician, who endeavoured to correct this inſtrument by a different application of the magades; but for the greater imperfections he ſays Didymus was not able to find out a cure. Towards the cloſe of this ſecond book he exhibits a ſhort ſcheme of the three genera, according to five muſicians, namely, Archytas, Ariſtoxenus, Eratoſthenes, the ſame Didymus, and himſelf; and a little farther on, tables of the ſection of the canon in all the ſeven modes according to the ſeveral genera.

In the third book chap. iv. he ſpeaks in general of the faculty of harmony, and of mathematical reaſoning as applied to it; the uſe

* There is very little doubt but that the inſtrument here delineated is the pandura of the Arabians, mentioned in a note of Meibomins on a paſſage in Nicomachus, for among the Arabian and Turkiſh inſtruments deſcribed by Merſennus are many in this form.

whereof he ſays is to contemplate and adjuſt the ratios. In the next enſuing chapter he proceeds, in the manner of Quintilian, to ſtate the analogy of muſic with the affections of the human mind, the ſyſtem of the univerſe, and in ſhort with every other ſubject in which number, proportion, or coincidence are concerned. In the courſe of this his reaſoning, he mentions that Pythagoras adviſed his diſciples at their riſing in the morning to uſe muſic, whereby that perturbation which is apt to affect the mind at the awakening from ſleep, might be prevented, and the mind be reduced to its wonted ſtate of compoſure: beſides which he ſays, that it ſeems the Gods themſelves are to be invoked with hymns and melody, ſuch as that of flutes or Egyptian trigons, to ſhew that we invite them to hear and be propitious to our prayers.

Upon a very careful review of this work of Ptolemy, it will appear that the doctrines contained in it, ſo far as they are capable of being rendered intelligible, are of ſingular uſe in the determination of ratios, and his very accurate diviſion of the monochord carries demonſtration with it. It was doubtleſs for this reaſon that our countryman Dr. Wallis, a man to whom the learned world are under high obligations, undertook the publication of it from a manuſcript in the Bodleian library, in the original Greek, with a Latin tranſlation of his own, together with copious notes, and an appendix by way of commentary, which the Doctor was the better qualified to give, as it abundantly appears, as well by divers other of his writings in the Philoſophical Tranſactions, as the work we are now ſpeaking of, that he was very profoundly ſkilled in the ſcience of muſic. How far he is to be depended on when he undertakes to render the ancient modes in modern characters ſeems very queſtionable, for were the Doctor's opinion right in that matter, all that controverſy which has ſubſiſted for theſe many centuries, not only touching the ſpecific differences between them, but even as to their number, muſt neceſſarily have ended ages ago; whereas, even at this day, the ableſt writers on the ſubject do not heſitate at ſaying that the doctrine of the modes is abſolutely inſcrutable; and perhaps it is for this reaſon only that ſo many have imagined that with them we have loſt the moſt valuable part of the art; but on the contrary it is worth remarking that the Doctor, though he was perhaps the ableſt geometer of his time, and had all the prejudices in favour of the ancients that

a man converſant with the beſt of their writers could be ſuppoſed to entertain, never intimates any ſuch matter; nay, ſo far is he from adjudging a preference to the ancient muſic over that of the moderns, that he ſcruples not to aſcribe the relations that are given of the effects of the former to the ignorance of mankind in the earlier ages, the want of refinement, the charms of novelty, and other probable cauſes. Dr. Wallis gave two editions of this work of Ptolemy, the one publiſhed in quarto at Oxford in 1682; another, as alſo the commentary of Porphyry, and a treatiſe of Manuel Bryennius, makes part of the third volume of his works, publiſhed in three volumes in folio, 1699.

CENSORINUS, a moſt famous grammarian, lived at Rome about A. C. 238 *, and wrote a book entitled De Die Natali. It was publiſhed by Erycius Puteanus at Louvain, in 1628, who ſtiles it Doctrinæ rarioris Theſaurus; and it is by others alſo much celebrated for the great light it has thrown on learning. It is a very ſmall work, conſiſting of only twenty-four chapters; the tenth is concerning muſic; and the ſubſequent chapters, as far as the thirteenth incluſive, relate to the ſame ſubject.

He profeſſes to relate things not known even to muſicians themſelves. He defines muſic to be the ſcience of well modulating, and to conſiſt in the voice or ſound. He ſays that ſound is emitted at one time graver, at others acuter; that all ſimple ſounds, in what manner ſoever emitted, are called phthongoi; and the difference, whereby one ſound is either more grave or more acute than another, is called diaſtema.

The reſt of his diſcourſe on muſic is here given in his own words:

'Many diaſtemata may be placed in order between the loweſt and the 'higheſt ſound, ſome whereof are greater, as the tone, and others 'leſs, as the hemitone; or a diaſtem may conſiſt of two, three, or more 'tones. To produce concordant effects, ſounds are not joined to-'gether capriciouſly, but according to rule. Symphony is a ſweet 'concent of ſounds. The ſimple or primitive ſymphonies are three, 'of which the reſt conſiſt; the firſt, having a diaſtem of two tones 'and a hemitone, is called a diateſſaron; the ſecond, containing 'three tones and a hemitone, is called a diapente; the third is the

* Fabricius. Biblioth. Lat. tom. I. pag. 537.

diapaſon,

'diapaſon, and conſiſts of the two former, for it is conſtituted either 'of ſix tones, as Ariſtoxenus and other muſicians aſſert, or of five 'tones and two hemitones, as Pythagoras and the geometricians ſay, 'who demonſtrate that two hemitones do not complete the tone; 'wherefore this interval, improperly called by Plato a hemitone, 'is truly and properly a dieſis or limma.

'But to make it appear that ſounds, which are neither ſenſible to 'the eyes, nor to the touch or feeling, have meaſures, I ſhall relate 'the wonderful comment of Pythagoras, who, by ſearching into the 'ſecrets of nature, found that the ſounds of the muſicians agreed to 'the ratio of numbers; for he diſtended chords equally thick and 'equally long, by different weights, theſe being frequently ſtruck, 'and their ſounds not proving concordant, he changed the weights; 'and having frequently tried them one after another, he at length 'diſcovered that two chords ſtruck together produced a diateſſaron; 'when their weights being compared together, bore the ſame ratio 'to each other as three does to four, which the Greeks call επίτριτος, 'epitritos, and the Latins ſupertertium. He at the ſame time found 'that the ſymphony, which they call diapente, was produced when 'the weights were in a ſeſquialtera proportion, namely, that of 2 'to 3, which they called hemiolium. But when one of the 'chords was ſtretched with a weight duple to that of the other, it 'ſounded a diapaſon.

'He alſo tried if theſe proportions would anſwer in the tibiæ, and 'found that they did; for he prepared four tibiæ of equal cavity or 'bore, but unequal in length; for example, the firſt was ſix inches 'long, the ſecond eight, the third nine, and the fourth twelve; 'theſe being blown into, and each compared with the others, he 'found that the firſt and ſecond produced the ſymphony of the dia-'teſſaron, the firſt and third a diapente, and the firſt and fourth the 'diapaſon: but there was this difference between the nature of the 'chords and that of the tibiæ, that the tibiæ became graver in pro-'portion to the encreaſe of their lengths, while the chords became 'acuter by an additional augmentation of their weights; the propor-'tion however was the ſame each way.

'Theſe things being explained, though perhaps obſcurely, yet as 'clearly as I was able, I return to ſhew what Pythagoras thought con-'cerning the number of the days appertaining to the partus. Firſt, he

'ſays

'ſays there are in general two kinds of birth, the one leſſer, of ſeven 'months, which comes forth from the womb on the two hundred 'and tenth day after conception; the other greater, of nine months, 'which is delivered on the two hundred and ſeventy-fourth day.' Cenſorinus then goes on to relate from Plato that in the work of conception there are four periods, the firſt of ſix days, the ſecond of eight, which two numbers are the ratio of the diateſſaron; the third of nine, which anſwers to the diapente, and the fourth, at the end whereof the fœtus is formed, of twelve, anſwering to the diapaſon in duple proportion.' After this he proceeds to declare the relations of the above numbers in theſe words.

'Theſe four numbers, ſix, eight, nine and twelve, being added 'together, make up thirty-five; nor is the number ſix undeſervedly 'deemed to relate to the birth, for the Greeks call it τελειος, teleios, 'and we perfectum, becauſe its three parts, a ſixth, a third, and a 'half, that is one, two, three, make up itſelf; but as the firſt ſtage 'in the conception is completed in this number ſix, ſo the former 'number thirty-five being multiplied by this latter ſix, the product is 'two hundred and ten, which is the number of days required to ma-'turate the firſt kind of birth. As to the other or greater kind, it is 'contained under a greater number, namely ſeven, as indeed is alſo 'the whole of human life, as Solon writes: the practice of the Jews, 'and the ritual books of the Etruſcans, ſeem likewiſe to indicate the 'predominancy of the number ſeven over the life of man; and Hip-'pocrates, and other phyſicians, in the diſeaſes of the body account 'the ſeventh as a critical day; therefore as the origin of the other 'birth is ſix days, ſo that of this greater birth is ſeven; and as in 'the former the members of the infant are formed in thirty-five 'days, ſo here it is done in almoſt forty, and for this reaſon, forty 'days are a period very remarkable; for inſtance, a pregnant woman 'did not go into the temple till after the fortieth day; after the birth 'women are indiſpoſed for forty days; infants for the moſt part are 'in a morbid ſtate for forty days; theſe forty days, multiplied by the 'ſeven initial ones, make two hundred and eighty, or forty weeks: 'but becauſe the birth comes forth on the firſt day of the fortieth 'week, ſix days are to be ſubtracted, which reduces the number of 'days to two hundred and ſeventy-four, which number very exactly 'correſponds to the quadrangular aſpect of the Chaldeans; for as the

'ſun

'ſun paſſes through the zodiac in three hundred and ſixty-five days
'and ſome hours; if the fourth part of this number, namely ninety-
'one days and ſome hours, be deducted therefrom, the remainder will
'be ſomewhat ſhort of two hundred and ſeventy-five days, by which
'time the ſun will arrive at that place where the quadrature has an
'aſpect to the beginning of conception. But let no man wonder
'how the human mind is able to diſcover the ſecrets of human na-
'ture in this reſpect, for the frequent experience of phyſicians
'enables them to do it.

'It is not to be doubted but that muſic has an effect on our birth;
'for whether it conſiſts in the voice or ſound only, as Socrates
'aſſerts, or, as Ariſtoxenus ſays, in the voice and the motion of the
'body, or of both theſe and the emotion of the mind, as Theophraſ-
'tus thinks, it has certainly ſomewhat in it of divine, and has a great
'influence on the mind. If it had not been grateful to the immor-
'tal Gods, ſcenical games would never have been inſtituted to appeaſe
'them; neither would the tibiæ accompany our ſupplications in the
'holy temples. Triumphs would not have been celebrated with the
'tibia; the cythara or lyre would not have been attributed to
'Apollo, nor the tibia, nor the reſt of that kind of inſtruments to
'the Muſes; neither would it have been permitted to thoſe who play
'on the tibia, by whom the deities are appeaſed, to exhibit public
'ſhews or plays, and to eat in the Capitol, or during the leſſer Quin-
'quatria*, that is on the ides of June; to range about the city, drunk,
'and diſguiſed in what garments they pleaſed. Human minds, and
'thoſe that are divine, though Epicurus cries out againſt it, acknow-
'ledge their nature by ſongs. Laſtly, ſymphony is made uſe of by
'the commanders of ſhips to encourage the ſailors, and enable them
'to bear up under the labours and dangers of a voyage; and while
'the legions are engaged in battle the fear of death is diſpelled by
'the trumpet; wherefore Pythagoras, that he might imbue his ſoul
'with its own divinity, before he went to ſleep and after he awaked
'was accuſtomed, as is reported, to ſing to the cithara; and Aſcle-
'piades the phyſician relieved the diſturbed minds of frenetics by
'ſymphony. Etophilus, a phyſician alſo, ſays that the pulſes of the
'veins are moved by muſical rhythmi; ſo that both the body and

* A feaſt in honour of Minerva.

'the

'the mind are ſubject to the power of harmony, and doubtleſs muſic 'is not a ſtranger at our birth.

'To theſe things we may add what Pythagoras taught, namely, 'that this whole world was conſtructed according to muſical ratio, 'and that the ſeven planets which move between the heavens and 'the earth, and predominate at the birth of mortals, have a rhyth-'mical motion and diſtances adapted to muſical intervals, and emit 'ſounds, every one different in proportion to its height, which 'ſounds are ſo concordant as to produce a moſt ſweet melody, though 'inaudible to us by reaſon of the greatneſs of the ſounds, which the 'narrow paſſages of our ears are not capable of admitting.' Then follows the paſſage declaring the Pythagorean eſtimate of the diſtances of the planets and their ſuppoſed harmonical ratio, hereinbefore cited from him *.

Cenſorinus concludes his Diſcourſe on Muſic with ſaying that Pythagoras compared many other things which muſicians treat of to the other ſtars, and demonſtrated that the whole world is conſtituted in harmony. Agreeable to this he ſays Dorylaus writes that this world is the inſtrument of God: and others, that as there are ſeven wandering planets, which have regular motions, that may fitly be reſembled to a dance †.

* See it in page 178, with a diagram.

† The general opinion of the learned in former ages, touching the harmony of the ſpheres, has been mentioned in a preceding page, but there appears a diſpoſition in the modern philoſophers to revive the notion. It ſeems that Dr. Gregory thought it well founded; and Mr. Maclaurin, in conformity with his opinion, Phil. Diſcov. of Newton, pag. 35, explains it thus: 'If we ſhould ſuppoſe muſical chords extended from the ſun to 'each planet; that all theſe chords might become uniſon, it would be requiſite to en-'creaſe or diminiſh their tenſions in the ſame proportions as would be ſufficient to render 'the gravities of the planets equal; and from the ſimilitude of theſe proportions the cele-'brated doctrine of the harmony of the ſpheres is ſuppoſed to have been derived.'

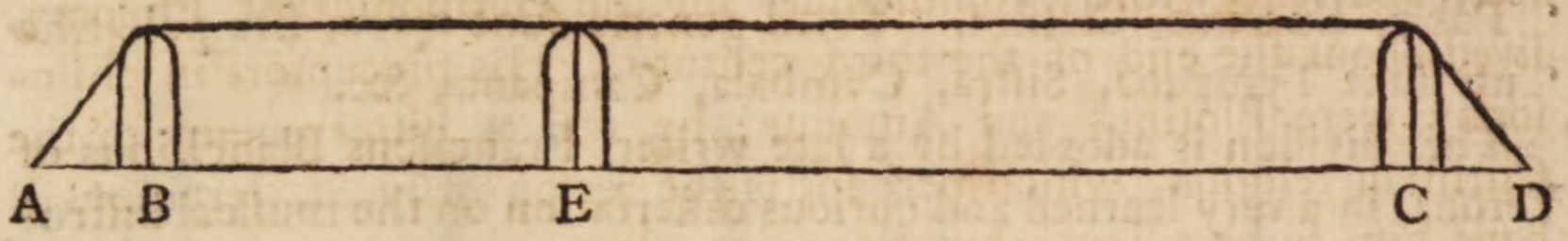
The author of a book lately publiſhed, entitled Principles and Power of Harmony, has added his ſuffrage in ſupport of the opinion. 'Certain, ſays he, as this harmonic coin-'cidence is now become, till Sir Iſaac Newton demonſtrated the laws of gravitation in 'relation to the planets, it muſt have paſſed for the dream of an Utopian philoſopher.' Pag. 146.

The ſame author, pag. 145, agreeable to what Cenſorinus above aſſerts, ſays that 'there 'are traces of the harmonic principle ſcattered up and down, ſufficient to make us look 'on it as one of the great and reigning principles of the inanimate world.' Some of theſe have hereinbefore been pointed out. Vide pag. 177, in not. To the inſtances there mentioned, the following may not improperly be added. The web of a ſpider formed of threads is of an hexangular figure, and each of the threads that divide the whole into ſix triangles, may be conſidered as a beam intended to give firmneſs and ſtability to the fabric; from one to the other of theſe beams the inſect conducts lines in a parallel direc-

PORPHYRIUS, a very learned Greek philoſopher, of the Platonic ſect, and who wrote a commentary on the Harmonics of Ptolemy, lived about the end of the third century. His preceptors in philoſophy were Plotinus and Amolius; he was a bitter enemy to the Chriſtian religion, which perhaps is the reaſon why St. Jerome will have him to be a Jew; but Eunapius affirms that he was a native of Tyre, and that his true name was Malchus, which in the Syrian language ſignifies a king; and that Longinus the ſophiſt, who taught him rhetoric, gave him the name of Porphyrius, in alluſion to the purple uſually worn by kings. Beſides the Commentary on Ptolemy he wrote the lives of divers philoſophers, of which only a fragment, containing the life of Pythagoras, is now remaining; a treatiſe of abſtinence from fleſh, an explication of the categories of Ariſtotle, and a treatiſe, containing fifteen books, againſt the Chriſtian religion, which he once profeſſed, as St. Auguſtine, Socrates, and others aſſert: this latter was anſwered by Methodius, biſhop of Tyre, and afterwards by Euſebius. He died about the end of the reign of Diocleſian, and in 388 his books were burned.

With regard to his commentary, it is evidently imperfect; for whereas the treatiſe of Ptolemy is divided into three books, the ſecond whereof contains fifteen chapters, Porphyry's commentary is continued no farther than to the end of chapter ſeven of that book, concluding with the ſeries of ſounds through each of the three genera. He ſeems to have been a virulent oppoſer of the Ariſtoxenians, and like his author adheres in general to the tenets of Pythagoras. Porphyry has given a deſcription of the harmonic canon much more intelligible than that of Ptolemy, and has delineated it in the following form.

tion, which, ſuppoſing them to be ten in number, do, in conſequence of their different lengths, conſtitute a perfect decachord. Kircher, who made this diſcovery, ſays, that were theſe lines or chords capable of ſuſtaining a force ſufficient to make them vibrate, it muſt neceſſarily follow from the ratios of their lengths, that between the ſound of the outer and the innermoſt, the interval would be a diapaſon and ſemiditone; and that the reſt of the chords, in proportion to their lengths, would produce the other conſonances. Muſurg. tom. I. pag. 441.



By which it appears that a chord A D, ſtrained over the immoveable magades B and C, which are nothing more than two parallelograms, with a ſemicircular arch at the top of each, together with a movable bridge of the ſame form E, but ſomewhat higher, will be ſufficient for the demonſtration of the conſonances, and this indeed is the repreſentation which Dr. Wallis in his notes on Ptolemy has thought proper to give of it.

Dr. Wallis has contented himſelf with publiſhing a bare verſion of this author, without the addition of notes, except a few ſuch ſhort ones as he thought neceſſary to correct a vicious reading, or explain a difficult paſſage.

The works of the ſeveral authors above-named declare very fully the ancient Greek theory; their practice may in a great meaſure be judged of from the forms of the ancient inſtruments, and of theſe it may be thought neceſſary in this place to give ſome account.

The general diviſion of muſical inſtruments is into three claſſes, the pulſatile, tenſile, and inflatile; and to this purpoſe Cardinal Bellarmine, in his Expoſition of the CLth pſalm, verſe 3, ſays, 'Tria 'ſunt inſtrumentorum genera, vox, flatus, et pulſus; omnium me-'minit hoc loco propheta.'

Of the firſt are the drum, the ſiſtrum, and bells. Of the ſecond the lute, the harp, the clavicymbalum, and viols of all kinds. Of the third are the trumpet, flutes, and pipes, whether ſingle or collected together, as in the organ.

And Kircher, in his Muſurgia, preface to book VI. has this paſſage 'Omnia inſtrumenta muſica ad tria genera, ut plurimum revocantur: 'Prioris generis dicuntur εγχορδα ſive εντατὰ, quæ nervis, ſeu chordis 'conſtant quæque plectris, aut digitis in harmonicos motus incitantur, 'ut ſunt Teſtudines, Pſalteria, Lyræ, Sambucæ, Pandoræ, Barbita, 'Nablia, Pectides, Clavicymbala, aliaque hujus generis innumera. 'Secundi generis ſunt εμφυσωμενα, πνευματικα, vel εμπνευσα, quæ inflata,

' ſeu ſpiritu incitata ſonum edunt ut Fiſtulæ, Tibiæ, Cornua, Litui,
' Tubæ, Buccinæ, Claſſica. Tertii generis ſunt κρουσα, ſive pulſatilia
' uti ſunt Tympana, Siſtra, Cymbala, Campanæ, &c.'

This diviſion is adopted by a late writer, Franciſcus Blanchinus of Verona, in a very learned and curious diſſertation on the muſical inſtruments of the ancients*; which upon the authority of ancient medals, intaglias, baſs-reliefs, and other ſculptures of great antiquity, exhibits the forms of a great variety of muſical inſtruments in uſe among the ancient Greeks and Romans, many whereof are mentioned, or alluded to, by the Latin poets in ſuch terms as contain little leſs than a preciſe deſignation of their reſpective forms. He has deviated a little from the order preſcribed by the above diviſion of muſical inſtruments into claſſes, by beginning with the inflatile ſpecies inſtead of the tenſile; nevertheleſs his diſſertation is very curious and ſatisfactory, and contains in it a detail to the following effect.

One of the moſt ſimple muſical inſtruments of the ancients is the Calamus paſtoralis, made of an oaten reed; it is mentioned by Virgil and many others of the Latin poets, and by Martianus Capella. See the form of it plate I. fig. 1.

Other writers mention an inſtrument of very great antiquity by the name of Oſſea tibia, a pipe made of the leg-bone of a crane. Fig. 2.

The Syringa or or pipe of Pan is deſcribed by Virgil, and the uſe of it by Lucretius, lib. V.

Et ſupra calamos unco percurrere labro.

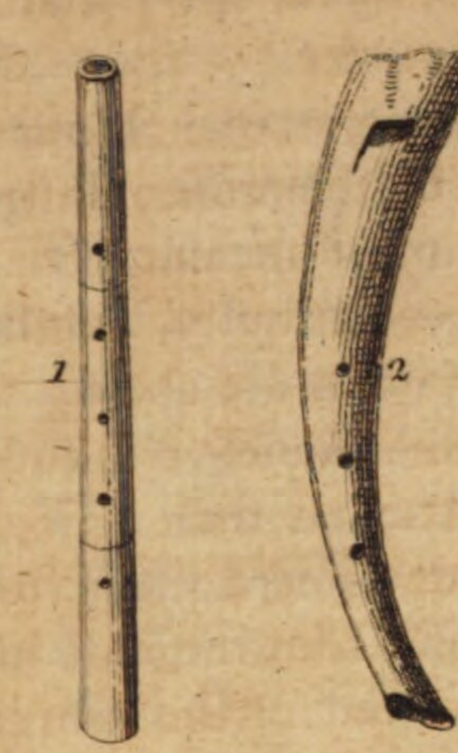
The figure of it occurs ſo frequently in medals, that a particular deſcription of it is unneceſſary. Fig. 3.

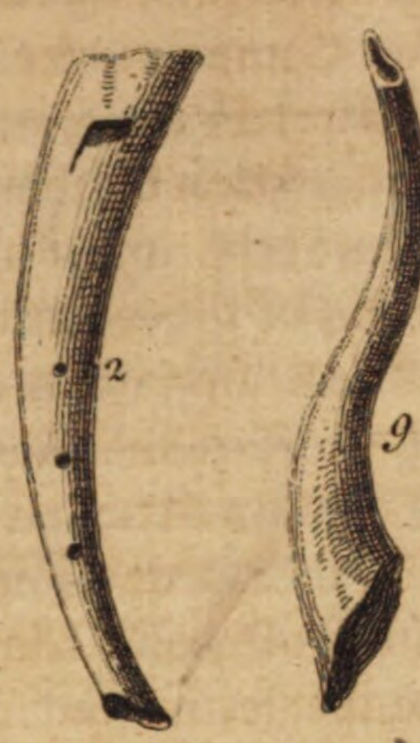
The Tibiæ pares, mentioned by Terence to have been played on, the one with the right, and the other with the left hand, are diverſely repreſented in Merſennus De Inſtrumentis harmonicis, pag. 7, and in the Diſſertation of Blanchinus now citing; in the former they are yoked together towards the bottom, and at the top, as fig. 4. In the latter they are much ſlenderer, and are not joined. Fig. 5.†

* De tribus Generibus Inſtrumentorum Muſicæ veterum Organicæ, Diſſertatio; Romæ, 1742.

† The tibiæ of the ancients, and eſpecially thoſe mentioned in the titles of Terence's comedies, have been the ſubject of much learned enquiry. Caſpar Bartholinus the anatomiſt has written a whole volume De Tibiis Veterum. Ælius Donatus, a Latin grammarian, and the preceptor of St. Jerome, ſays that the tone of the tibiæ dextræ was grave, and

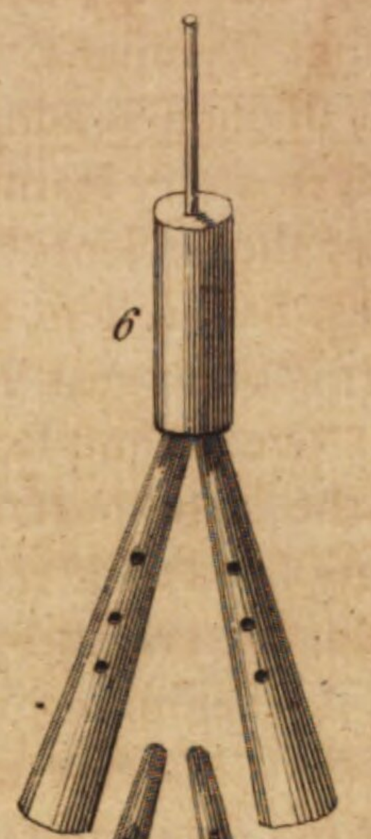
Plate I. *to front page 241.*


1


2

9

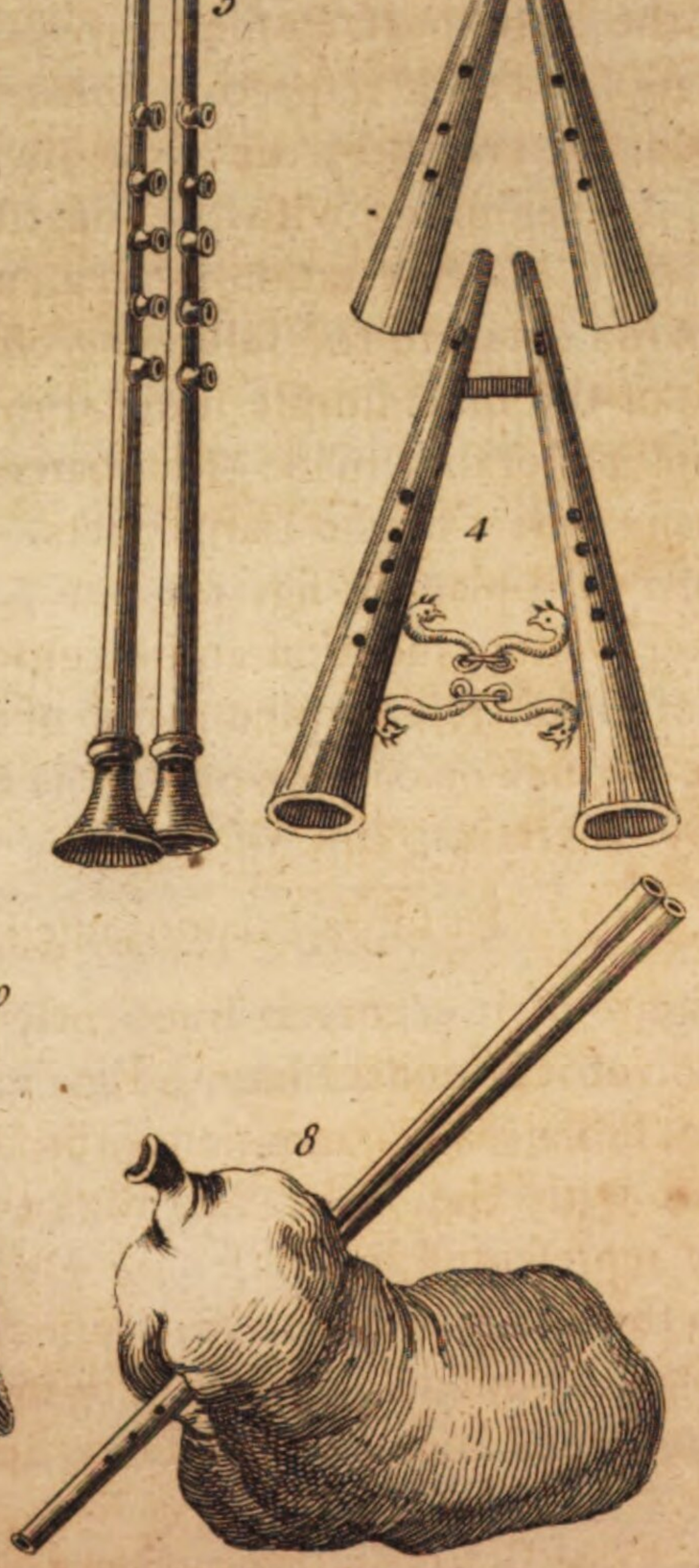
5

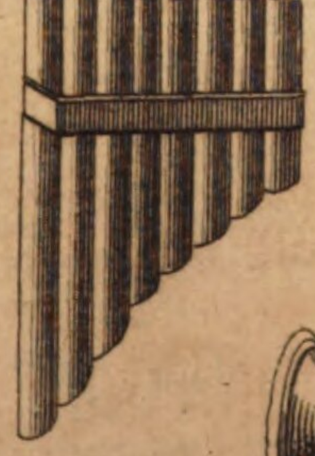

6

7

10

4


8


3

11

'that the tragedians learned it of her, and conjoined it with the Do-
'rian; but this is denied by thoſe who ſay that Pythocleides the
'player on the flute, and alſo Lyſis the Athenian, invented this con-
'junction of the Dorian with the Lydian mode. As to the ſofter
'Lydian, which was of a nature contrary to the Lydian properly ſo
'called, and more reſembling the Ionian, it is ſaid to have been in-
'vented by Damon the Athenian. Plato deſervedly rejected theſe
'effeminate modes, and made choice of the Dorian, as more ſuit-
'able to warlike tempers; not that we are to ſuppoſe him ignorant
'of what Ariſtoxenus has ſaid in his ſecond book, that in a wary
'and circumſpect government advantages might be derived from the
'uſe of the other modes; for Plato attributed much to muſic, as
'having been a hearer of Draco the Athenian, and Metellus of Agri-
'gentum; but it was the conſideration of its ſuperior dignity and
'majeſty that induced him to prefer the Dorian mode. He knew
'moreover that Alcmas, Pindar, Simonides, and Bacchylides, had
'compoſed ſeveral Parthenioi in the Dorian mode; and that ſuppli-
'cations and hymns to the Gods, tragical lamentations, and ſome-
'times love-verſes were alſo compoſed in it; but he contented himſelf
'with ſuch ſongs as were made in honour of Mars and Minerva, or
'thoſe other that were uſully ſung at the ſolemn offerings called
'Spondalia. The Lydian and Ionian modes were chiefly uſed by the
'tragedians, and with theſe alſo Plato was well acquainted. As to
'the inſtruments of the ancients, they were in general of a narrow
'compaſs; the lyre uſed by Olympus and Terpander and their fol-
'lowers had but three chords, which is not to be imputed to ig-
'norance in them, for thoſe muſicians who made uſe of more were
'greatly their inferiors both in ſkill and practice.'

'The chromatic genus was formerly uſed by thoſe who played on
'the lyre, but by the tragedians never. It is certainly of greater an-
'tiquity than the enarmonic; yet the preference given to the dia-
'tonic and enarmonic was not owing to ignorance, but was the ef-
'fect of judgment. Telephanes of Megara was ſo great an enemy to
'the ſyrinx or reed-pipe, that he would never ſuffer it to be joined
'to the tibia; or that other pipe made of wood, generally of the
'lote-tree, and for that reaſon he forbore to go to the Pythian
'games. In ſhort, if a man is to be deemed ignorant of that which
'he makes no uſe of, there would be found a great number of igno-

rant

'rant perſons in this age; for we ſee that the admirers of the Dorian 'mode make no uſe of the Antigenidian method of compoſition: and 'other muſicians refuſe to imitate Timotheus, being bewitched with 'the trifles and idle poems of Polyeides.'

'If we compare antiquity with the preſent times, we ſhall find 'that formerly there was great variety in muſic, and that the diverſi-'ties of meaſure were then more eſteemed of than now. We are now 'lovers of learning, they were lovers of time and meaſure; plain it is 'therefore that the ancients did not becauſe of their ignorance, but 'in conſequence of their judgment, refrain from broken meaſures; 'and if Plato preferred the Dorian to the other modes, it was only 'becauſe he was the better muſician; and that he was eminently 'ſkilled in the ſcience appears from what he has ſaid concerning the 'procreation of the ſoul in his Timæus.'

'Ariſtotle, who was a diſciple of Plato, thus labours to convince 'the world of the majeſty and divine nature of muſic; "Harmony, "ſaith he, deſcended from heaven, and is of a divine, noble, and "angelic nature; being fourfold as to its efficacy, it has two me-"diums, the one arithmetical, the other harmonical. As for its "members, its dimenſions, and exceſſes of intervals, they are beſt "diſcovered by number and equality of meaſure, the whole ſyſtem "being contained in two tetrachords."

'The ancient Greeks were very careful to have their children 'thoroughly inſtructed in the principles of muſic, for they deemed it 'of great uſe in forming their minds, and exciting in them a love of 'decency, ſobriety, and virtue: they alſo found it a powerful incen-'tive to valour, and accordingly made uſe of pipes or flutes when 'they advanced to battle: the Lacedemonians and the Cretans did 'the ſame; and in our times the trumpet ſucceeding the pipe, as 'being more ſonorous, is uſed for the ſame purpoſe. The Argives 'indeed at their wreſtling matches made uſe of fifes called Schenia, 'which ſort of exerciſe was at firſt inſtituted in honour of Danaus, 'but afterwards was conſecrated to Jupiter Schenius or the Mighty; 'and at this day it is the cuſtom to uſe fifes at the games called Pen-'tathla, which conſiſt of cuffing, running, dancing, hurling the 'ball, and wreſtling. But among the ancients, muſic in the theatres 'was never known; for either they employed it in the education of

'their

'their youth, or confined it within the walls of their temples; but 'now our muſicians ſtudy only compoſitions for the ſtage.'

'If it ſhould be demanded, Is muſic ever to remain the ſame, and 'is there not room for new inventions? The anſwer is that new in- 'ventions are allowed, ſo as they be grave and decent; the ancients 'themſelves were continually adding to and improving their muſic. 'Even the whole Mixolydian mode was a new invention; ſuch alſo 'were the Orthian and Trochean ſongs; and, if we may believe 'Pindar, Terpander was the inventor of the Scolian ſong, and Ar- 'chilocus of the iambic and divers other meaſures, which the tra- 'gedians took from him, and Crexus from them. The Hypolydian 'mode was the invention of Polymneſtes, who alſo was the firſt that 'taught the manner of alternately ſoft and loud. Olympus, beſides 'that he regulated in a great meaſure the ancient Greek muſic, 'found out and introduced the enarmonic genus, and alſo the Pro- 'ſodiac, the Chorian, and the Bacchian meaſures; all which it is 'manifeſt were of ancient invention. But Laſus Hermionenſis * 'applying theſe meaſures to his dithyrambic compoſitions, and mak- 'ing uſe of an inſtrument with many holes, by an addition of tones 'and hemitones made an abſolute innovation in the ancient muſic. 'In like manner Menalippides the lyric poet, Philoxenus, and Ti- 'motheus, all forſook the ancient method. The latter until the 'time of Terpander of Antiſſa uſed a lyre with only ſeven ſtrings, but 'afterwards he added to that number. The wind-inſtruments alſo 'received a great alteration; and in general the plainneſs and ſimpli- 'city of the ancient muſic was loſt in that affected variety which 'theſe and other muſicians introduced.'

'In ancient times, when Poetry held the precedency of the other 'arts, the muſicians who played on wind-inſtruments were retained 'with ſalaries by the poets, to aſſiſt thoſe who taught the actors, till 'Menalippides appeared, after which that practice ceaſed.'

* Laſus Charbini from Hermione, a city of Achaia, lived about the 58th Olympiad, in the time of Darius Hyſtaſpes: ſome reckon him among the ſeven wiſe-men, in the room of Periander. He was the firſt who wrote a book concerning muſic, and brought the dithyrambics into the games and exerciſes, where he was a judge or moderator, deciding contentious diſputations. This Laſus was a muſician of great fame, and is mentioned by Plutarch as the firſt who changed any thing in the ancient muſic. Meibom. on Ariſtoxenus, from Suidas.

'Pherecrates

'Pherecrates the comic poet introduces Muſic in the habit of a wo-
'man with her face torn and bruiſed; and alſo Juſtice, the latter of
'whom, demanding the reaſon of her appearing in that condition is
'thus anſwered by Muſic: *

"It is my part to ſpeak and yours to hear, therefore attend to my
"complaints. I have ſuffered much, and have long been oppreſſed
"by that beaſt Menalippides, who dragged me from the fountain of
"Parnaſſus, and has tormented me with twelve ſtrings: to complete
"my miſeries, Cineſian the Athenian, a pretender to poetry, com-
"poſed ſuch horrid ſtrophes and mangled verſes, that I, tortured
"with the pain of his dithyrambics, was ſo diſtorted that you would
"have ſworn that my right ſide was my left: nor did my misfortunes
"end here, for Phrynis, in whoſe brains is a whirlwind, racked me
"with ſmall wires, from which he produced twelve tireſome har-
"monies. But him I blame not ſo much, becauſe he ſoon repented
"of his errors, as I do Timotheus, who has thus furrowed my face,
"and ploughed my cheeks; and Pyrrias the Mileſian, who as I
"walked the ſtreets met me, and with his twelve ſtrings bound and
"left me helpleſs on the earth."

* This Pherecrates the comic poet lived in the time of Alexander the Great, and attended him, as we are told, in his expeditions, [Suid. in Pherecrates] and was contemporary with Ariſtophanes, Plato, Eupolis, and Phrynicus, all comic writers [Id. in Plato.] Phrynis who played on the lyre was the ſon of Cabon, [Id. in Phrynis] and ſcholar of Ariſtocleides, who pretended to be of the family of Terpander, and was a favourite with Hiero king of Sicily, as ſome accounts tell us, which would throw him back near one hundred and fifty years in time before our poet Pherecrates: but if we may believe Plutarch, he ſhould have been a contemporary with the poet at leaſt, if he perſonally contended the muſic prize with Timotheus, with whoſe playing we are told Alexander's ſpirit was ſo raiſed and animated to war. [Suid. in Timotheus.] But may it not be ſaid that Timotheus did contend the prize againſt ſome piece formerly compoſed by Phrynis, as the dramatic poets ſometimes conteſted the priority againſt a play of ſome deceaſed poet? if ſo, Phrynis then might have lived as early as the period mentioned by Suidas.

It is true indeed Plutarch, where he gives us this point of hiſtory, does not mention Phrynis by name, but diſtinguiſhes him only as the ſon of Cabon, and by his nickname Ιωνοκαμπτης, Ionocamptes; which ſarcaſtical addition he obtained, becauſe by his effeminate modulations he had corrupted the old muſic in the like manner as the Ionic movements had debauched the old maſculine dances. Jul. Pollux, lib. IV. cap. ix. § 66.

The ſame Phrynis is likewiſe rallied by Ariſtophanes [in Nubibus, v. 967] and others of the comic poets, for the levity of his compoſitions, and for overdoing every thing in his performance. He was marked out, even to infamy, for his innovations in muſic; for his ſoft and affected modulations, which were ſo abhorrent from the ſimplicity of the ancient muſic; for his intermingling and confounding the modes; and for debaſing the ſcience to paraſitiſm and ſervile offices.

'That

'That virtuous manners are in a great measure the effect of a well-grounded musical education, Aristoxenus has made apparent. He mentions Telesias the Theban, a contemporary of his, who being a youth, had been taught the noblest excellencies of music, and had studied the best Lyric poets, and withal played to perfection on the flute; but being past the prime of his age, he became infatuated with the corrupted music of the theatres, and the innovations of Philoxenus and Timotheus; and when he laboured to compose verses, both in the manner of Pindar and of Philoxenus, he could succeed only in the former, and this proceeded from the truth and exactness of his education; therefore if it be the aim of any one to excel in music, let him imitate the ancients; let him also study the other sciences, and make philosophy his tutor, which will enable him to judge of what is decent and useful in music.

'The genera of music are three, the diatonic, the chromatic, and enarmonic; and it concerns an understanding artist to know which of these three kinds is the most proper for any given subject of poetry.

'In musical institution the way has sometimes been for the tutor first to consider the genius and inclination of the learner, and then to instruct him in such parts of the science as he should discover most affection for; but the more prudent sort, as the Lacedemonians of old, the Mantinæans, and Pellenians rejected this method.'

Here the discourse of Soterichus grows very obscure, and has a reference to terms of which a modern can entertain no idea. Farther on he resumes the consideration of the genera, which hespeaks of to this effect.

'Now then, there being three genera of harmony, equal in the quantity of systems or intervals, and number of tetrachords, we find not that the ancients disputed about any of them except the enarmonic, and as to that they differed only about the interval called the diapason.'

The speaker, by whom all this while we are to understand Soterichus, then proceeds to shew that a mere musician is an incompetent judge of music in general; and to this purpose he asserts that Pythagoras rejected the judgment of music by the senses, and maintained that the whole system was included in the diapason. He adds, that the later musicians had totally exploded the most noble of the modes; that

that they made hardly the leaſt account of the enarmonic intervals, and were grown ſo ignorant as to believe that the enarmonic dieſis did not fall within the apprehenſion of ſenſe.

He then enumerates the advantages that accrue from the uſe of muſic, and cites Homer to prove its effects on Achilles in the height of his fury againſt Agamemnon: he ſpeaks alſo of a ſedition among the Lacedemonians, which Terpander appeaſed by the power of his muſic; and a peſtilence among the ſame people, which Thales the Cretan ſtopped by the ſame means.

Oneſicrates, who hitherto appears to have acted the part of a moderator in this colloquy, after beſtowing his commendations both on Lyſias and Soterichus, addreſſes them in theſe terms.

'But for all this, my moſt honoured friends, you ſeem to have 'forgotten the chief of all muſic. Pythagoras, Archytas, Plato, and 'many others of the ancient philoſophers maintain that there could 'be no motion of the ſpheres without muſic, ſince that the ſupreme 'Deity conſtituted all things harmoniouſly; but now it would be un-'ſeaſonable to enter upon a diſcourſe on that ſubject.'

And ſo ſinging a hymn to the Gods and the Muſes, Oneſicrates diſmiſſes the company.

Thus ends the Dialogue of Plutarch on muſic, which though a celebrated work of antiquity, is in the judgment of ſome perſons rendered ſtill more valuable by the paſſage from Pherecrates, which he has introduced into it. The leaſt that can be ſaid of which is, that without a comment it is next to impoſſible to underſtand it: the following remarks, which were communicated to the late Dr. Pepuſch by a learned but anonymous correſpondent of his, may go near to render it in ſome degree intelligible.

'The poet, ſpeaking of the ſucceſſive abuſes of muſic, mentions 'firſt Phrynis, and afterwards Timotheus; ſo that Phrynis ſhould 'ſeem to have led the way to the abuſes which Timotheus is repre-'hended for, or rather gave into, to the prejudice of muſic; and it is 'probable he did ſo, from a ſpeech of Agis made to Leonidas, which 'is tranſmitted to us by Plutarch in the life of Agis.

'What we want the explanation of, is that paſſage of Pherecrates 'which relates to the five ſtrings and the twelve harmonies.

'From the time of Terpander, and upwards, we know that the 'lyre had ſeven ſtrings, and thoſe adjuſted to the number of the

'ſeven planets, and as ſome ſuppoſe to their motions alſo. For 'though Euphorion in Athenæus is made to ſay, that the uſe of the 'inſtruments with many ſtrings was of very great antiquity, yet the 'lyre was reckoned complete, and to have attained the full meaſure 'of perfect harmony when it had ſeven ſtrings; becauſe, as Ariſtotle 'obſerved, the harmonies conſiſted in the number of chords, and be-'cauſe that was the number of old uſed.

'And therefore when Timotheus added four ſtrings to the former 'ſeven, that innovation was ſo offenſive to the Lacedemonians, that 'he was formally proſecuted for the preſumption; and it was one of 'the cauſes for which they were ſaid to have baniſhed him their 'ſtate. The edict by which they did ſo, ſtill extant, is tranſmitted 'to us as a curioſity by Boetius *; ſome however have ſaid that Ti-'motheus cleared himſelf from this ſentence by producing a very 'ancient ſtatue of Apollo found at Lacedæmon, holding a lyre with 'nine ſtrings †. But if he avoided this ſentence of baniſhment, he did 'not wholly eſcape cenſure; for Pauſanias, who wrote as early as 'Athenæus, tells us where the Lacedæmonians hung up his lyre pub-'licly, having puniſhed him for ſuperadding four ſtrings, in com-'poſitions for that inſtrument, to the ancient ſeven; and Plutarch 'likewiſe tells us that before this, when the abovementioned Phry-'nis was playing on the lyre at ſome public ſolemnity, one of the 'Ephori, Ecprepes by name, taking up a knife, aſked him on which 'ſide he ſhould cut off the ſtrings that exceeded the number of 'nine ‡.

* Boetius, in his treatiſe De Muſica, lib. I. cap. i. has given it in the original Greek; and the author of a book lately publiſhed, entitled Principles and Power of Harmony, has given the following tranſlation of it.

Whereas Timotheus, the Mileſian, coming to our city, has deformed the ancient muſic; and laying aſide the uſe of the ſeven-ſtringed lyre, and introducing a multiplicity of notes, endeavours to corrupt the ears of our youth by means of theſe his novel and complicated conceits, which he calls chromatic, by him employed in the room of our eſtabliſhed, orderly, and ſimple muſic; and whereas, &c. It therefore ſeemeth good to us the King and Ephori, after having cut off the ſuperfluous ſtrings of his lyre, and leaving only ſeven thereon, to baniſh the ſaid Timotheus out of our dominions, that every one beholding the wholeſome ſeverity of this city, may be deterred from bringing in amongſt us any unbecoming cuſtoms, &c.

† Caſaub. ad Athenæum, lib. VIII. cap. xi.

‡ This fact is alluded to by Agis king of Sparta, in a ſpeech of his to Leonidas, thus recorded by Plutarch.

'And you that uſe to praiſe Ecprepes, who being Ephore, cut off two of the nine ſtrings 'from the inſtrument of Phrynis the muſician, and to commend thoſe who did afterwards

'imitate

'But though theſe innovations of Timotheus were ſaid to be ſo 'offenſive to the Lacedæmonians, it was not the firſt time of their 'having been put in practice; for Phrynis had before done the like, 'and been puniſhed, as we ſhall find, in the ſame manner.

'Theſe accounts therefore go thus far towards an explanation of 'one part of the paſſage before us; that as to the five ſtrings, we may 'be pretty certain that the lyre of Phrynis was not confined to that 'number, nay we have particular teſtimonies that Phrynis himſelf 'was noted for playing on the lyre with more than ſeven ſtrings; 'the ſyſtem of the lyre, from the time of Terpander to that of Phry-'nis, had continued altogether ſimple and plain, but Phrynis begin-'ning to ſubvert this ſimplicity by adding two ſtrings to his inſtru-'ment, we are told by Plutarch, in more than one paſſage, that Ec-'prepes the magiſtrate cut of two off his nine ſtrings *.'

'The next thing therefore to be enquired into, is what the poet 'could mean by playing twelve harmonies on five ſtrings?

'Perhaps by Harmonies we are to underſtand Modes; and if ſo, 'Phrynis may be ridiculed for ſuch a volubility of hand, and ſuch an 'affectation of variety, that he extracted a dozen tones from five 'ſtrings only, or that he played over the whole twelve modes within 'that compaſs. For beſides the ſeven principal modes, it is ſaid 'that Ariſtoxenus by converting five ſpecies of the diapaſon, intro-'duced five other ſecondary modes; and that the intermingling of 'the modes is the ſenſe of ἁρμονιας here, ſeems plain from another 'paſſage in Plutarch ‡, where he ſays, "That it was not allowed "to compoſe for the lyre formerly, as in his time, nor to intermingle "the modes ἁρμονιας and meaſures of time, for they obſerved one and "the ſame caſt peculiar to each diſtinct mode, which had therefore "a name to diſtinguiſh it by†; they were called Νομοί or rules and li-"mitations, becauſe the compoſers might not tranſgreſs or alter the "form of time and meaſure appointed to each one in particular."

'imitate him in cutting the ſtrings of Timotheus's harp, with what face can you blame me 'for deſigning to cut off ſuperfluity and luxury from the commonwealth? Do you think 'thoſe men were ſo concerned only about a fiddle-ſtring, or intended any thing elſe than 'by checking the voluptuouſneſs of muſic, to keep out a way of living which might deſtroy 'the harmony of the city? Plutarch in Vitâ Agidis.'

† Vide the laſt preceding note, and Plutarch in Laconic. Inſtitutio.

‡ De Muſica.

'For we are certain that both the Athenians and Lacedæmonians 'had their laws by which the particular ſpecies of muſic were de- 'ſigned to be preſerved diſtinct and unconfuſed; and their hymns, 'threni, pæans, and dithyrambs kept each to their ſeveral ſort of ode; 'and ſo the compoſers for the lyre were not permitted to blend one 'melody with another, but they who tranſgreſſed were cenſured and 'fined for it.'

It has already been mentioned that the genuineneſs of this dialogue has been queſtioned, ſome writers affirming it to be a ſpurious production, and others contending it to be a genuine work of Plutarch, worthy of himſelf, and in merit not inferior to the beſt of the treatiſes contained in the Sympoſiacs. It is therefore neceſſary to take a view of the controverſy, and to ſtate the arguments of the contending parties in ſupport of their ſeveral opinions. It ſeems that the original ground of this diſpute was a note prefixed to Amyot's French tranſlation of this dialogue in the following words: 'Ce traité n'appartient 'point, ou bien peu à la muſique de pluſieurs voix accordées & entre- 'lacées enſemble, qui eſt aujourd'hui en uſage; ains à lafaçon ancienne, 'qui conſiſtoit en la convenance du chant avec le ſens & la meſure de 'la lettre, & la bonne grace du geſte; & le ſtyle ne ſemble point 'être de Plutarque.'

Amyot's tranſlation bears date in 1610; notwithſtanding which, Fabricius, in his catalogue of the writings of Plutarch, has mentioned this diſcourſe without ſuggeſting the leaſt doubt of its authenticity *. But a diſpute having ariſen in the French Academy of Inſcriptions and Belles Lettres, on the queſtion, whether the ancients were acquainted with muſic in conſonance or not, this tract of Plutarch, in which there is not the ſlighteſt mention of any ſuch practice, was urged in proof that they were ſtrangers to it. While a doubt remained of the genuineneſs of this diſcourſe, its authority could not be deemed concluſive; thoſe who maintained the affirmative of the principal queſtion, therefore inſiſted on the objection raiſed by Amyot; and this produced an enquiry into the ground of it, or, in other words, whether Plutarch was really the author of that diſcourſe on muſic which is generally aſcribed to him or not: this enquiry is contained in three papers written by Monſieur Burette, and inſerted in the Me-

* Biblioth. Græc. lib. IV. cap. xi. pag. 364, N. 124.

moirs

moirs of the abovementioned Academy, tome onzieme, Amſt. 1736, with the following titles, Examen du Traité de Plutarque ſur la Muſique—Obſervations touchant l'Hiſtoire litteraire du Dialogue de Plutarque ſur la Muſique—Analyſe du Dialogue de Plutarque ſur la Muſique, the publication whereof has put an end to a queſtion, which but for Amyot had probably never been ſtarted.

Meibomius, in the general preface to his edition of the muſical writers, and Doni are laviſh in their commendations of this treatiſe: the latter of them, in his diſcourſe De Præſtantia Muſicæ Veteris, pag. 65, calls it a golden little work; but whether it merits ſuch an encomium muſt be left to the judgment of ſuch as can truly ſay they underſtand it. As to the hiſtorical part, it is undoubtedly curious, except in ſome inſtances, that ſeem to approach too near that ſpecies of hiſtory which we term fabulous, to merit any great ſhare of attention; but as to that other wherein the author profeſſes to explain the nature of the ancient muſic, it is to be feared he is much too obſcure for modern comprehenſion. The particulars moſt worthy of obſervation in this work of Plutarch are, the perpetual propenſity to innovation, which the muſicians in all ages ſeem to have diſcovered, and the extreme rigour with which thoſe in authority have endeavoured to guard againſt ſuch innovations: the famous decree of the Ephori againſt Timotheus juſt mentioned, which ſome how or other was recovered by Boetius, and is inſerted in a preceding note, is a proof that the ſtate thought itſelf concerned in preſerving the integrity of the ancient muſic; and if it had ſo great an influence over the manners of the Spartan youth, as in the above treatiſe is ſuggeſted, it was doubtleſs an object worthy their attention.

CHAP.

CHAP. VIII.

ARISTIDES QUINTILIANUS is ſuppoſed to have flouriſhed, A. C. 110. this is certain that he wrote after Cicero, for from his books De Republica he has abridged all the arguments that Cicero had advanced againſt muſic, and has oppoſed them to what he urged in behalf of it in his oration for Roſcius. It is farther clear that Ariſtides muſt have been prior to Ptolemy, for he ſpeaks of Ariſtoxenus who admitted of thirteen modes, and of thoſe who after him allowed of fifteen, but he takes no notice of Ptolemy who reſtrained the number of them to ſeven. His treatiſe De Muſica conſiſts of three books. The firſt contains an ample diſcuſſion of the doctrine of the modes: ſpeaking of the diagram by which the ſituation and relation of them is explained, he ſays it may be delineated in the form of wings, to manifeſt the difference of the tones among themſelves; but he has given no repreſentation of it.

All that has been hitherto ſaid of the modes is to be underſtood of melody, for there is another and to us a more intelligible ſenſe of the word, namely that, where it is applied to the proportions of time, or the ſucceſſion and different duration of ſounds, of which whether they are melodious, or ſuch as ariſe from the ſimple percuſſion of bodies, the modes of time, for by that appellation we chuſe to diſtinguiſh them from the modes of tone, are as ſo many different meaſures. The effect of the various metrical combinations of ſounds it undoubtedly what the ancients, more particularly this author, meant by the word Rythmus. Of time he ſays there are two kinds, the one ſimple and indiviſible, reſembling a point in geometry; the other compoſite, and that of different meaſures, namely, duple, treble and quadruple *. The rythmic ge-

* This paſſage in Ariſtides Quintilianus has drawn on him a ſevere cenſure from the late Dr. Pemberton, the Greſham profeſſor of phyſic, who ſays that he here endeavours to make out four different meaſures of time in verſe alſo. This ſays the Dr. is talking nonſenſe. But, adds he, this writer is apt to amuſe himſelf with fanciful reſemblances; and having firſt imagined I know not what analogy between theſe four meaſures of time, and the four dieſes, into which a tone was conſidered as diviſible, he muſt needs try at making out the like in relation to words. Obſervations on Poetry eſpecially the Epic. Lond. 1738. page 110.

nera

nera he makes to be three in number, namely, the equal, the ſeſquialteral, and the duple; others he ſays add the ſupertertian: theſe are conſtituted from the magnitude of the times; for one compared to itſelf begets a ratio of equality, two to one is duple, three to two is ſeſquialteral, and four to three ſupertertian: He ſpeaks of the elation and poſition of ſome part of the body, the hand or foot perhaps, as neceſſary to the rythmus, probably as a meaſure; and this correſponds with the practice of the moderns in the meaſuring of time by the tactus or beat. The remainder of the firſt book of this work of Quintilian contains a very laborious inveſtigation of meaſures, with all their various inflexions and combinations, in which the author diſcovers a profound knowledge.

The ſecond book treats of muſic as a means to regulate the external behaviour, as that of philoſophy is to improve the mind. Muſic, he ſays, by its harmony poliſhes the manners, and its rythmus renders the body more agreeable; for youth being impatient of mere admonition, and capable of inſtruction by words alone, require ſuch a diſcipline as without diſturbing the rational part of their natures ſhall familiarly and by degrees inſtruct them: he adds that it is eaſily perceived that all boys are prompt to ſing and ready for briſk motions, and that it is not in the power of their governors to hinder them from the pleaſure which they take in exerciſes of this ſort. In human things, continues this author, there is no action performed without muſic; it is certain that divine worſhip is rendered more ſolemn by it, particular feaſts and public conventions of cities rejoice with it, wars and voyages are excited by it, the moſt difficult and laborious works are rendered eaſy and delightful by it, and we are excited to the uſe of muſic by divers cauſes. Nor are its effects confined to the human ſpecies; irrational animals are affected by it, as is plain from the uſe which is made of pipes by ſhepherds, and horns by goatherds. Of the uſe of muſic in war, as practiſed by the ancients, he has the following paſſage: 'Numa has ſaid, that by muſic he corrected 'and refined the manners of the people, which before were rough 'and fierce: to that end he uſed it at feaſts and ſacrifices. In the 'wars where it is and will be uſed, is there any need to ſay how the 'Pyrrhic muſic is a help to martial diſcipline? certainly it is plain 'to every one, and that to iſſue commands by words in time of 'action would introduce great confuſion, and might be dangerous by

'their being made known to the enemies, if they were ſuch as uſe 'the ſame language. To the trumpet, that martial inſtrument, a 'particular cantus or melody is appropriated, which varies according 'to the occaſion of ſounding it, ſo as for the attack by the van or either 'wing, or for a retreat, or whether to form in this or that particular 'figure, a different cantus is requiſite; and all this is ſo ſkilfully 'contrived, as to be unintelligible to the enemy, though at the 'ſame time by the army it is plainly underſtood.'

Thus much of this author is intelligible enough to a reader of this time; but when he ſpeaks, as he does immediately after, of the efficacy of muſic in quieting tumults and appeaſing an incenſed multitude, it muſt be owned his reaſoning is not ſo clear: as little can we conceive any power in muſic over the iraſcent and concupiſcent affections of the mind, which he aſſerts are abſolutely under its dominion. The remainder of this ſecond book conſiſts of a chain of very abſtruſe reaſoning on the nature of the human ſoul, no way applicable to any conception that we at this time are able to form of muſic, and much too refined to admit of a place in a work, in which it is propoſed not to teach, but to deliver a hiſtory of, the ſcience.

The third book contains a relation of ſome experiments made with ſtrings, diſtended by weights in given proportions, for finding out the ratios of conſonances; a method which this author ſeems to approve; and to recommend this practice, he cites the authority of Pythagoras, who he ſays, when he departed this life, exhorted his diſciples to ſtrike the monochord, and thereby rather inform their underſtandings than truſt to their ears in the meaſure of intervals. He ſpeaks alſo of an inſtrument for the demonſtration of the conſonances, called a helicon, which was of a ſquare form, and on which were ſtretched, with an equal tenſion, four ſtrings *. For the reaſon above given, it ſeems no way neceſſary to follow this author through that ſeries of geometrical reaſoning, which he has applied for the inveſtigation of his ſubject in the ſucceeding pages of his book, wherefore a paſſage relating to the tetrachords, remarkable enough in its kind, ſhall conclude this extract from his very learned but abſtruſe work.

'The tetrachords are agreed to be five in number, and each 'has a relation to one or other of the ſenſes; the tetrachord hypa-'ton reſembles the touch, which, is affected in new-born infants,

* See it in a ſubſequent chapter of this ſecond book.

'when

'when they are impelled by the cold to cry. The tetrachord 'meſon is like the taſte, which is neceſſary to the preſervation 'of life, and hath a ſimilitude to the touch. The third, called 'ſynnemenon, is compared to the ſmell, becauſe this ſenſe is allied 'to the taſte; and many, as the ſons of art ſay, have been reſtored 'to life by odours. The fourth tetrachord, termed diezeugmenon, is 'compared to the hearing, becauſe the ears are ſo remote from the 'other organs of ſenſe, and are disjoined from each other. The 'tetrachord hyperboleon is like the ſight, as it is the moſt acute of 'the ſyſtems, as the ſight is of the ſenſes.' Farther, this author tells us that 'the five tetrachords do in like manner anſwer to the five 'primary elements, that is to ſay, hypaton to the earth, as the moſt 'grave; meſon to the water, as neareſt the earth; ſynnemenon to 'the air, which paſſes through the water remaining in the profun-'dities of the ſea and the caverns of the earth, and is neceſſary for 'the reſpiration of animals, which could not live without it; die-'zeugmenon to the fire, the motion whereof, as tending upwards, 'is againſt nature; laſtly, the tetrachord hyperboleon anſwers to 'the æther, as being ſupreme and above the reſt.' There are, he ſays, alſo analogies between the three ſeveral ſyſtems of diapente and the ſenſes; but we haſten to diſmiſs this fanciful doctrine. Moreover, adds he, 'in diſcourſing of the human ſoul, ſyſtems are 'not improperly compared to the virtues. Hypaton and meſon are 'to be attributed to temperance, the efficacy whereof is double, and 'conſiſts in an abſtinence from unlawful pleaſures, reſembling the 'moſt grave of theſe two ſyſtems; as alſo in a moderate uſe of law-'ful enjoyments, not improperly ſignified by the tetrachord meſon; 'but the tetrachord ſynnemenon is to be attributed to juſtice, which 'being joined with temperance, exerts itſelf in the diſcharge of pub-'lic duties, and in acts of private beneficence: the diezeugmenon has 'the reſemblance of fortitude, which virtue delivers the ſoul from 'the dominion of the body; laſtly, the hyperboleon emulates the 'nature of prudence, for that tetrachord is the end of the acumen, 'and this virtue is the extremity of goodneſs. Again, theſe virtues 'may be aſſimilated to the three ſyſtems of diapente *; the two firſt, 'juſtice and temperance, which are always placed together as being a

* The varieties or different ſyſtems of diapente are four, and therefore it may be queſtioned why in this place the author has limited them to three.

'check to the concupiſcent part of the mind, reſemble the firſt of 'theſe ſyſtems; fortitude may be compared to the ſecond, as that 'virtue denotes the iraſcent part and refers to each of our two na- 'tures; and prudence to the third, as declaring the rational eſſence. 'Add to this, that the two ſpecies of diapaſon anſwer to the twofold 'diviſion of the mind; the firſt reſembling the irrational, and the 'ſecond the rational part thereof.'

It has been remarked of Quintilian that he is extremely fond of analogies, vide pag. 222, in a note; and the above paſſages are a proof that this charge againſt him is not ill grounded.

ALYPIUS, the next in ſucceſſion of the authors now remaining to him above cited, or, as ſome ſuppoſe, a contemporary of his, as flouriſhing about A. C. 115*, compiled a work entitled an Introduction to Muſic, which ſeems to be little elſe than a ſet of tables explaining the order of the ſounds as they ariſe in the ſeveral modes of their reſpective genera in the ancient method of notation. The muſical characters uſed by the ancients were arbitrary; they were nothing more than the Greek capitals mutilated, inverted, and variouſly contorted, and are eſtimated at no fewer than twelve hundred and forty. A ſpecimen of them is herein before inſerted in two plates from Kircher.

MANUEL BRYENNIUS, another of the Greek writers on muſic, is ſuppoſed to have flouriſhed under the elder Palæologus, viz. about the year of Chriſt 120. He wrote three books on harmonics, the firſt whereof is a kind of commentary on Euclid, as the ſecond and third are on Ptolemy †. He profeſſes to have ſtudied perſpicuity for the ſake of young men, but has given very little more than is to be found in one or other of the above authors. Meibomius had given the public expectations of a tranſlation of this work, but not living to complete it, Dr. Wallis undertook it, and it now makes a part of the third volume of his works, publiſhed at Oxford in three volumes in folio, 1699.

BACCHIUS SENIOR was a follower of Ariſtoxenus; Fabricius ſuppoſes him to have been tutor to the emperor Marcus Antoninus, and conſequently to have lived about A. C. 140‡. He wrote in Greek a very ſhort introduction to muſic in dialogue, which, with a Latin tranſlation thereof, Meibomius has publiſhed. It ſeems it was firſt

* Fabr. Biblioth. Græc. lib. III. cap. x. † Ibid. ‡ Ibid.

pub-

publiſhed in the original by Merſennus, in his Commentary on the ſix firſt chapters of Geneſis; and that afterwards he publiſhed a tranſlation of it in French, which Meibomius, in the preface to his edition of the ancient muſical authors, cenſures as being groſsly erroneous.

GAUDENTIUS the philoſopher, according to Fabricius *, ſeems to have written before Ptolemy, and treading in the ſteps of Ariſtoxenus, compoſed an introduction to harmonics, which Caſſiodorus commends as an elegant little work; though he does not pretend to ſay who he was, or where he lived; however upon his authority Caſſiodorus relates that Pythagoras found out the original precepts of the art by the ſound of hammers and the percuſſion of extended chords; and indeed as to this matter Gaudentius is very explicit. For his work in general, excepting a few definitions and a repreſentation of the muſical characters in the method of Alypius, it is little more than an abridgment of Ariſtoxenus, and that ſo very ſhort and obſcure, that little advantage can be derived from the peruſal of it.

CLAUDIUS PTOLEMEUS was an Egyptian, born at Peluſium; not one of the Ptolemies kings of Egypt, with ſome one of whom he has been confounded; nor the ſame with Ptolemy the mathematician and aſtronomer, who, as Plutarch relates in his life of Galba, was the conſtant companion of that emperor and was alſo attendant on the emperor Otho in Spain, and foretold that he ſhould ſurvive Nero, as Tacitus tells us, lib. I. cap. xxii. The Ptolemy here ſpoken of flouriſhed in the reign of the emperor Marcus Aurelius Antoninus, as Suidas teſtifies; and alſo himſelf in his Magnæ Syntaxis, where he ſays that he drew up his aſtronomical obſervations at Alexandria, for which reaſon he is by Suidas and others called Alexandrinus, in the ſecond year of Antoninus Pius, which anſwers to the year of Chriſt 139 †. He was the author of a treatiſe on harmonics in three books, a work much more copious than any of thoſe above-mentioned; and it muſt be allowed that he of all the ancient writers ſeems to have entred the moſt deeply into the ſubject of harmonics. In the firſt chapter of his firſt book, he aſſigns the criteria of harmony, which he makes to be ſenſe and reaſon: the former of theſe, he ſays, finds out what is nearly allied to truth, and approves of what is accurate, as the latter finds out what is accurate and approves of what is

* Biblioth. Græc. lib. III. cap. x. † Ibid. cap. xiv.

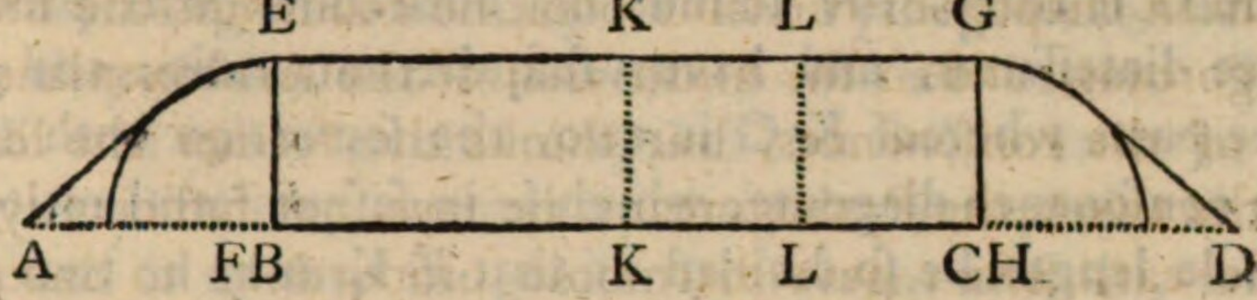
nearly allied to truth. Chap. iii. ſpeaking of the cauſes of acuteneſs and gravity, he takes occaſion to compare the wind-pipe to a flute; and to remark as a ſubject of wonder, that power or faculty which enables a finger readily and inſtantaneouſly to hit thoſe degrees of dilatation and contraction as are neceſſary to produce ſounds, grave or acute, in any given proportion.

In the ſixth chapter of the ſame book he condemns the method of the Pythagoreans, and in the ninth that of the Ariſtoxenians, in the adjuſting of the conſonances, but thinks the former the leaſt erroneous of the two: the Pythagoreans, he ſays, not ſufficiently attending to the ear, often gave harmonic proportions to incongruous ſounds; on the contrary, the Ariſtoxenians, aſcribing all to the ear, applied numbers, the images of reaſon, not to the differences of ſounds, but to their intervals. To correct the errors of theſe two very different methods, he contrived an inſtrument very ſimple and inartificial in its conſtruction, but of ſingular uſe in the adjuſting of ratios, which though in truth but a monochord, as conſiſting of one ſtring only, he with great propriety called the Harmonic Canon, by which appellation it is conſtantly diſtinguiſhed in the writings of ſucceeding authors. His deſcription of the inſtrument and its uſe, as alſo the reaſons that led him to the invention, are contained in the eighth chapter of the ſame firſt book, and are to the following effect:

'We omit to explain what is propoſed, by the means of pipes or 'flutes, or by weights affixed to ſtrings, becauſe they cannot make 'the neceſſary demonſtrations with ſufficient accuracy, but would ra-'ther occaſion controverſy; for in pipes and flutes, as alſo in the 'breath which is injected into them, there is great diſorder; and as 'to ſtrings with weights affixed to them, beſides that of a number 'of ſuch ſtrings, we can hardly be ſure that they are exactly equal 'in ſize, it is almoſt impoſſible to accommodate the ratios of the 'weights to the ſounds intended to be produced by them; for with 'the ſame degree of tenſion two ſtrings of different thickneſs would 'produce ſounds differently grave or acute: and farther, which is 'more to the preſent purpoſe, a ſtring, at firſt of an equal length to 'others, by the affixing to it a greater weight than is affixed to the 'reſt, becomes a longer ſtring, from whence ariſes another difference 'of ſound beſides what might be deduced from the ratio of weight 'alone. The like will happen in ſounds produced from hammers or

'quoits

'quoits of unequal weights; and we may obſerve the ſame in ſome 'veſſels that are firſt empty, and afterwards filled; and certainly it 'is difficult in all theſe caſes to provide againſt the diverſity of 'matter and figure in each; but in the canon, as I term it, the chord 'moſt readily and accurately demonſtrates the ratios of the ſeveral 'conſonances.'



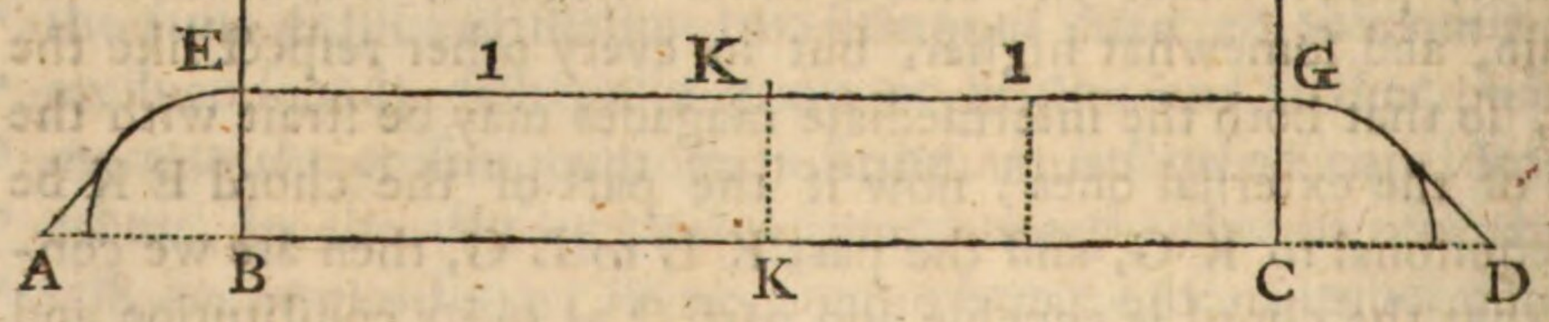
A B C D The line of the canon.
A E G D The chord.
A E, G D The ligament or place where it is faſtened.
E B, G C Perpendiculars of the immoveable magades or bridges.
K K, L L The moveable magades.
B K, L C The canon or rule divided.

Suppoſe A B C D to be a right line, at each end thereof apply magades or little bridges, equal in height and having ſurfaces as nearly ſpherical as poſſible; as ſuppoſe the ſurface B, E to be deſcribed round the center F, and the ſurface C, G round the center H. Let then the points E, G be taken in the middle or biſection of theſe curved ſuperficies, the magades being ſo placed as that lines E, F, and G, H, drawn from the ſaid biſections E and G, may be perpendicular to the right line A B, C D. Now if from the points A D a chord be ſtrained over the middle points E and G of the ſaid curved ſuperficies, the part E G will be parallel to the right line A B, C D, becauſe of the equal height of the magades, and will have its limits at E and G. Transfer then the line E G to the line A B C D and having firſt biſected the whole length at K, and the half of that diſtance at L, place under the chord other magades, which muſt be very thin, and ſomewhat higher, but in every other reſpect like the former, ſo that both the intermediate magades may be ſtrait with the middle of the external ones; now if the part of the chord E K be found equitonal to K G, and the part K L to L G, then are we convinced that the chord is equable and perfect as to its conſtitution and make, and conſequently fit for the experiment; but if it ſhould not prove ſo, the trial is to be transferred to another part, or even to a new

chord,

chord, till we obtain this condition of equability under the circumſtances of ſimilar moveable magades, and a ſimilar length and tenſion of the parts of the chord. This being done and the chord divided according to the proportions of the conſonances, we ſhall by the application of the moveable magades prove by our ears the ratios of correſponding ſounds; for giving to the diſtance E K four of ſuch parts whereof K G is three, the ſounds on both ſides will produce the conſonance diateſſaron, and have a ſeſquitertian ratio; and giving to E K three parts whereof K G is two, the ſounds on both ſides will make the conſonance diapente, which is in ſeſquialteral ratio. Again, if the whole length be ſo divided as that E K may be two parts and K G one of them, it ſhall be the uniſon diapaſon, which conſiſts in a duple ratio. If it be ſo that E K be eight parts whereof K G is three, it will be the conſonance diapaſon and diateſſaron, in the ratio of eight to three; farther if it be divided ſo as that E K be three parts and K G one of them, it will be diapente and diapaſon, in a triple ratio; and laſtly if it be ſo divided as that E K be four and K G one, it will be the uniſon diſdiapaſon in a quadruple ratio.

RATIOS.	THE PROOF.	CONSONANCES
$\frac{4}{1}$	E 4 K, 1 G	Diſdiapaſon
$\frac{3}{1}$	E 3 K, 1 G	Diapaſon and diapente
$\frac{8}{3}$	E 8 K, 3 G	Diapaſon and diateſſaron
$\frac{2}{1}$	E 2 K, 1 G	Diapaſon
$\frac{3}{2}$	E 3 K, 2 G	Diapente
$\frac{4}{3}$	E 4 K, 3 G	Diateſſaron



How the monochord of Pythagoras was conſtructed, or in what manner he divided it, we are no where told: it ſeems difficult to conceive

conceive that for producing the conſonances it could be divided in any other manner than this of Ptolemy, and yet this author cenſures the followers of Pythagoras for not knowing how to reaſon about the conſonances, which one would think they could not fail to do from principles ſo clear as thoſe deducible from experiments on the monochord. But as to the Ariſtoxenians, he cenſures them for rejecting the reaſonings of the Pythagoreans, at the ſame time that they would not endeavour to find out better. To underſtand theſe and other invectives againſt this ſect, it is to be obſerved that they meaſured the intervals by the ear as our practical muſicians do now, that is to ſay, the greater by fourths or fifths, and the leſs by tones and ſemitones; thus to aſcertain the meaſure of an octave, they applied that of a diateſſaron or fourth above the uniſon, and another below the octave, and between the approximating extremities of theſe two intervals they found the diſtance of a tone, which furniſhed a common meaſure for the leſs intervals of a fourth, a fifth, and the reſt; and enabled them to ſay that a tone is the difference between the diateſſaron and the diapente: this Ptolemy calls remitting one queſtion to another, and he adds that the ear, when it would judge of a tone needs not the help of a compariſon of it with the diateſſaron or any other conſonance, and yet adds he, 'if we 'would aſk of the Ariſtoxenians what is the ratio of a tone, they 'will ſay perhaps that it is two of thoſe intervals, that is to ſay 'hemitones, of which the diateſſaron contains five, and in like man-'ner that the diateſſaron is five, of thoſe of which the diapaſon is 'twelve, and ſo of the reſt, till at laſt they come to ſay that the 'ratio of a tone is two, which is not defining thoſe ratios.'

Ptolemy, lib. I. cap. x. farther denies the aſſertion of the Ariſtoxenians, that the diateſſaron contains two tones and half, and the diapente three and a half; as alſo that the diapaſon conſiſts of ſix tones, as the ſeveral contents of thoſe two ſyſtems of two and a half, and three and a half, ſuppoſing this eſtimation of them to be juſt, would make undoubtedly ſix; but by his diviſion of the monochord, he clearly demonſtrates that the term by which the diateſſaron exceeds the diatone, and which he calls a limma, is leſs than a hemitone, in the ſame proportion as 1944 bears to 2048, a difference however much too ſmall for the ear to diſtinguiſh. His demonſtration

monſtration of this propoſition is given in a preceding chapter of this work.

To enter into a diſcuſſion of that very abſtruſe ſubject, the diviſion of the diapaſon, would require a much more minute inveſtigation of the doctrine of ratios than is requiſite in this place; it muſt however be obſerved, that ſuppoſing the ear alone to determine the preciſe limits of any ſyſtem, that of the diateſſaron for example, and that ſuch ſyſtem were transferred to the monochord, a repetition of the ſyſtem ſo transferred would fail to produce a ſeries of ſyſtems conſonant in the extremities. Thus let a given ſound be, as we ſhould now call it G, and let the monochord be divided by a bridge according to the rules above preſcribed, ſo as to give its fourth C; and let a tone, D, be ſet on by another bridge in like manner, and after that another fourth, which would terminate at G, and would ſeem to make what we ſhould call a diapaſon: we ſhould find upon taking away the intermediate bridges at C and D, that the interval from G to G would be more than a diapaſon; and that were this method of aſcertaining the terms of the conſonances repeated through a ſeries of octaves, the diſſonance would be increaſed in proportion to the number of repetitions. Ptolemy has taken another method, chap. xi. of this his firſt book, and by an accumulation of ſeſquioctave tones has clearly demonſtrated that ſix ſuch, exceed the conſonance diapaſon. This deficiency, if it may be ſo called, in the intervals of which the diapaſon is compounded, and the difference between tuning by the ear and by numbers, has ſuggeſted to mathematicians what is called a temperament, which propoſes a certain number of integral parts for the limit of the diapaſon, and the diviſion of the amount of the ſeveral limmas that occur in the progreſſion to it, in ſuch a manner as to make the conſonances contained in it as nearly perfect as poſſible.

The remainder of Ptolemy's firſt book treats of the genera. Chap. xii. exhibits the diviſion of Ariſtoxenus, which he condemns; and chap. xiii. that of Archytas of Tarentum, whom he cenſures for defining the genera by the interjacent intervals rather than by the ratios of the ſounds among themſelves, and charges him with raſhneſs and want of thought.

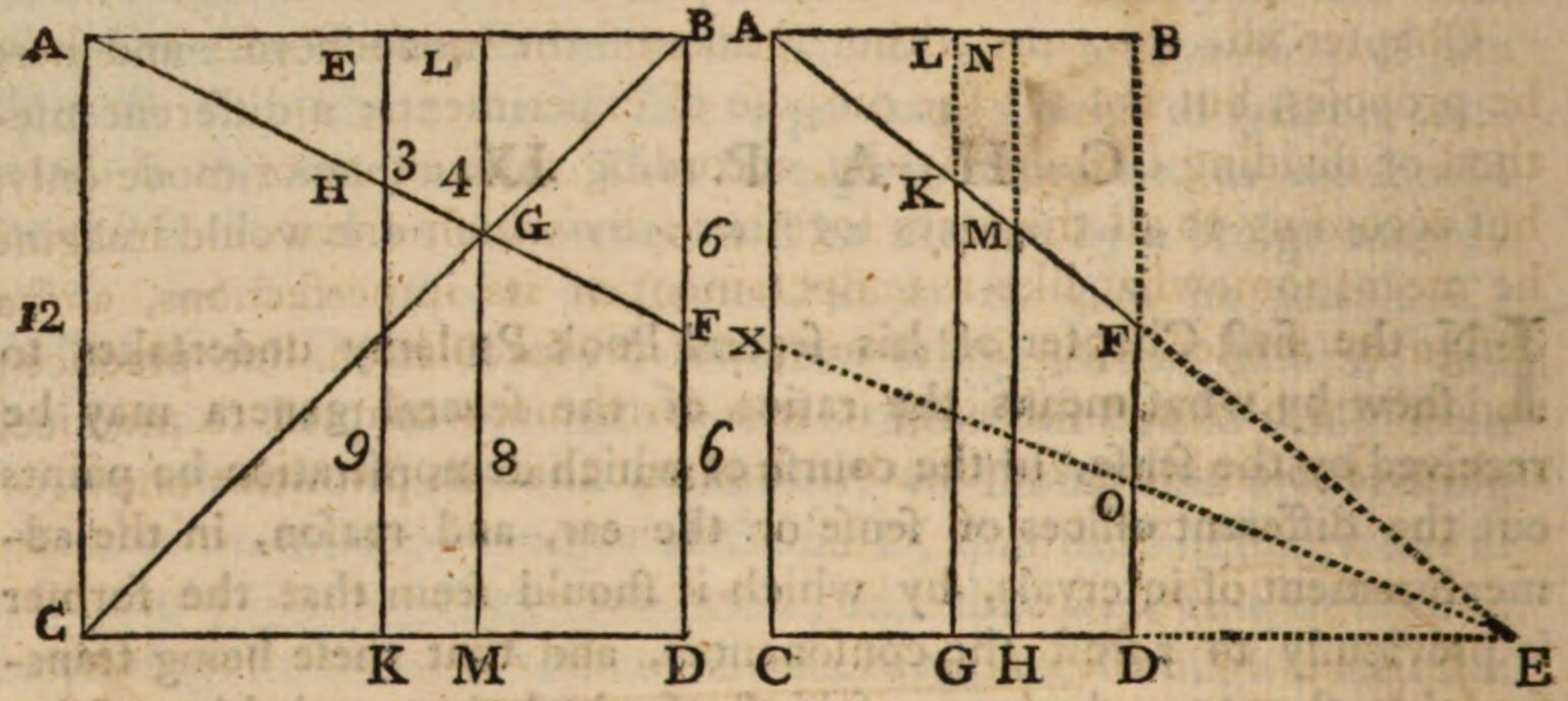
The uſe and application of the genera is at this day ſo little underſtood, that we are greatly at a loſs to account for any other diviſion of the

the tetrachord than that which characterizes the diatonic genus: Nor does it ſeem poſſible, with the utmoſt ſtrength of the imagination, to conceive how a ſeries of ſounds ſo extremely ungrateful to the ear as thoſe of which the chromatic and enarmonic genera are ſaid to be formed, could ever be received as muſic in the ſenſe in which that word is now underſtood.

CHAP. IX.

IN the firſt Chapter of his ſecond Book Ptolemy undertakes to ſhew by what means the ratios of the ſeveral genera may be received by the ſenſe, in the courſe of which demonſtration he points out the different offices of ſenſe or the ear, and reaſon, in the admeaſurement of intervals, by which it ſhould ſeem that the former is previouſly to adjuſt the conſonances, and that theſe being transferred to the canon, become a ſubject of calculation: and this poſition of his is undoubtedly true; for the determination of the ſenſes in all ſubjects where harmony or ſymmetry are concerned is arbitrary, and it is the buſineſs of reaſon, aſſiſted by numbers, to enquire whether this determination has any foundation in nature or not; and if it has not, we pronounce it fantaſtical and capricious; for example we perceive by the ear a conſonance between the uniſon and its octave, and we are conſcious of the harmony reſulting from thoſe two ſounds; but little are we aware of the wonderful relation that ſubſiſts between them, or that if an experiment be made by ſuſpending weights to the chords that produce it, whoſe lengths are by the laws of harmony required to be in the proportion of 2 to 1, that the ſhorter would make two vibrations to one of the longer, and that the vibrations would exactly coincide in that relation as long as both chords ſhould continue in motion. Again with reſpect to the forms of bodies, when we prefer that of a ſphere to one leſs regular, we never attend to the properties of a ſphere, but reaſon will demonſtrate a perfection in that figure which is not to be found in an irregular polygon.

In the ſecond chapter of his ſecond book he deſcribes an inſtrument or diagram called the Helicon, invented as it ſhould ſeem by himſelf, for demonſtrating the conſonances, ſo ſimple in its conſtruction that its very figure ſeems to ſpeak for itſelf and to render a verbal explanation, though he has given a very long one of it, unneceſſary. It is of this form



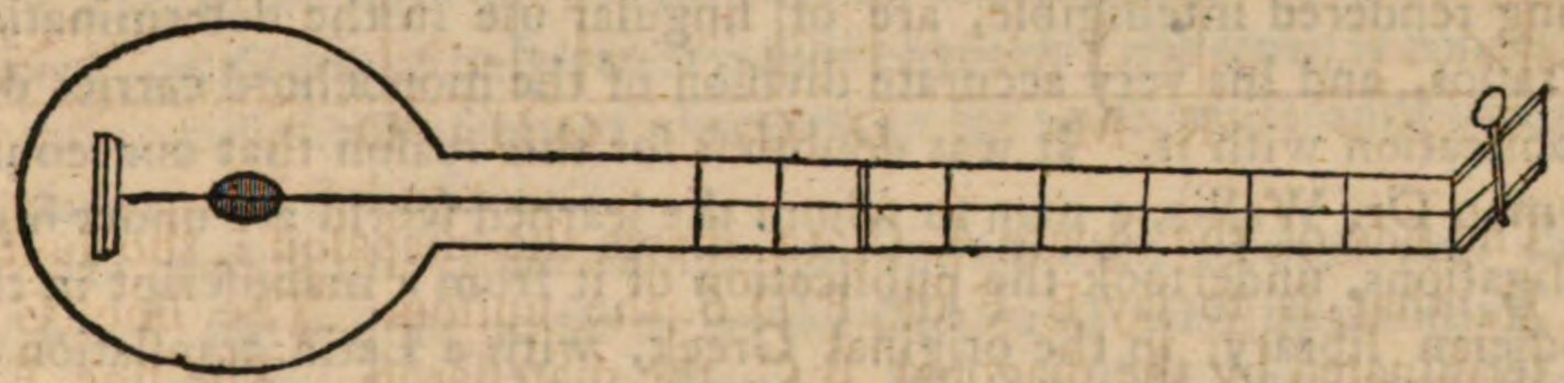
The ſide of the ſquare A C 12 ſhews the diapaſon; the half of B D, that is to ſay B F or F D 6 the uniſon. The line G M 8, terminated by the diagonal B C, the diateſſaron. The line E K divides the quadrangle equally, and H K 9, terminated by the line A F, ſhews the diapente. The lines L G and E H are in the ratio of 4 to 3, which is that of the diateſſaron; and laſtly the lines H K 9 and G M 8 ſhew the ſeſquioctave tone.

To this diagram Ptolemy has added another not leſs eaſy to be comprehended than the former, in which the lines B D, N H, L G, and A C are ſuppoſed to be chords of equal lengths but biſected by the line A F in the direction A E: this line may be ſuppoſed to be a bridge, or ſubductorium, ſtopping the four chords at A K M F, and thereby giving the proportions 12 9 8 6; which proportions will alſo reſult from a ſubductorium placed in the direction X E, for X C will be duple of O D, and the two intermediate chords ſeſquialtera and ſeſquitertia, and with reſpect to each other, ſeſquioctave; in all agreeing with the ratios in the former diagram.

In

In the ninth chapter of book II. Ptolemy takes occaſion to ſay that there are only ſeven tones or modes, for that there are but ſeven ſpecies of diapaſon; a poſition that will be eaſily granted him by the moderns who ſuppoſe the word, tone or mode, when applied to ſound, to anſwer to what we term the key or fundamental note. What he ſays farther concerning the modes has already been mentioned in a preceding chapter of this book.

Chapter xii. the ſame author ſpeaks of the monochord; and here he propoſes, but not for the purpoſe of experiments, a different method of dividing it, not, ſays he, according to one tone or mode only, but according to all the tones together; by which one would imagine he meant ſomewhat like a temperament of its imperfections, and a deſign to render it an inſtrument not of ſpeculation but practice; and indeed beſides exhibiting it in a form more adapted to practice, and more reſembling a muſical inſtrument than its primitive one *.



He ſpeaks, though not very intelligibly, of the manner of performing on it, and recommends to conceal its defects the conjunction with it, either of a pipe or the voice. A little after, he ſpeaks of Didymus a muſician, who endeavoured to correct this inſtrument by a different application of the magades; but for the greater imperfections he ſays Didymus was not able to find out a cure. Towards the cloſe of this ſecond book he exhibits a ſhort ſcheme of the three genera, according to five muſicians, namely, Archytas, Ariſtoxenus, Eratoſthenes, the ſame Didymus, and himſelf; and a little farther on, tables of the ſection of the canon in all the ſeven modes according to the ſeveral genera.

In the third book chap. iv. he ſpeaks in general of the faculty of harmony, and of mathematical reaſoning as applied to it; the uſe

* There is very little doubt but that the inſtrument here delineated is the pandura of the Arabians, mentioned in a note of Meibomius on a paſſage in Nicomachus, for among the Arabian and Turkiſh inſtruments deſcribed by Merſennus are many in this form.

whereof he ſays is to contemplate and adjuſt the ratios. In the next enſuing chapter he proceeds, in the manner of Quintilian, to ſtate the analogy of muſic with the affections of the human mind, the ſyſtem of the univerſe, and in ſhort with every other ſubject in which number, proportion, or coincidence are concerned. In the courſe of this his reaſoning, he mentions that Pythagoras adviſed his diſciples at their riſing in the morning to uſe muſic, whereby that perturbation which is apt to affect the mind at the awakening from ſleep, might be prevented, and the mind be reduced to its wonted ſtate of compoſure: beſides which he ſays, that it ſeems the Gods themſelves are to be invoked with hymns and melody, ſuch as that of flutes or Egyptian trigons, to ſhew that we invite them to hear and be propitious to our prayers.

Upon a very careful review of this work of Ptolemy, it will appear that the doctrines contained in it, ſo far as they are capable of being rendered intelligible, are of ſingular uſe in the determination of ratios, and his very accurate diviſion of the monochord carries demonſtration with it. It was doubtleſs for this reaſon that our countryman Dr. Wallis, a man to whom the learned world are under high obligations, undertook the publication of it from a manuſcript in the Bodleian library, in the original Greek, with a Latin tranſlation of his own, together with copious notes, and an appendix by way of commentary, which the Doctor was the better qualified to give, as it abundantly appears, as well by divers other of his writings in the Philoſophical Tranſactions, as the work we are now ſpeaking of, that he was very profoundly ſkilled in the ſcience of muſic. How far he is to be depended on when he undertakes to render the ancient modes in modern characters ſeems very queſtionable, for were the Doctor's opinion right in that matter, all that controverſy which has ſubſiſted for theſe many centuries, not only touching the ſpecific differences between them, but even as to their number, muſt neceſſarily have ended ages ago; whereas, even at this day, the ableſt writers on the ſubject do not heſitate at ſaying that the doctrine of the modes is abſolutely inſcrutable; and perhaps it is for this reaſon only that ſo many have imagined that with them we have loſt the moſt valuable part of the art; but on the contrary it is worth remarking that the Doctor, though he was perhaps the ableſt geometer of his time, and had all the prejudices in favour of the ancients that

a man converſant with the beſt of their writers could be ſuppoſed to entertain, never intimates any ſuch matter; nay, ſo far is he from adjudging a preference to the ancient muſic over that of the moderns, that he ſcruples not to aſcribe the relations that are given of the effects of the former to the ignorance of mankind in the earlier ages, the want of refinement, the charms of novelty, and other probable cauſes. Dr. Wallis gave two editions of this work of Ptolemy, the one publiſhed in quarto at Oxford in 1682; another, as alſo the commentary of Porphyry, and a treatiſe of Manuel Bryennius, makes part of the third volume of his works, publiſhed in three volumes in folio, 1699.

CENSORINUS, a moſt famous grammarian, lived at Rome about A. C. 238 *, and wrote a book entitled De Die Natali. It was publiſhed by Erycius Puteanus at Louvain, in 1628, who ſtiles it Doctrinæ rarioris Theſaurus; and it is by others alſo much celebrated for the great light it has thrown on learning. It is a very ſmall work, conſiſting of only twenty-four chapters; the tenth is concerning muſic; and the ſubſequent chapters, as far as the thirteenth incluſive, relate to the ſame ſubject.

He profeſſes to relate things not known even to muſicians themſelves. He defines muſic to be the ſcience of well modulating, and to conſiſt in the voice or ſound. He ſays that ſound is emitted at one time graver, at others acuter; that all ſimple ſounds, in what manner ſoever emitted, are called phthongoi; and the difference, whereby one ſound is either more grave or more acute than another, is called diaſtema.

The reſt of his diſcourſe on muſic is here given in his own words:

'Many diaſtemata may be placed in order between the loweſt and the 'higheſt ſound, ſome whereof are greater, as the tone, and others 'leſs, as the hemitone; or a diaſtem may conſiſt of two, three, or more 'tones. To produce concordant effects, ſounds are not joined to-'gether capriciouſly, but according to rule. Symphony is a ſweet 'concent of ſounds. The ſimple or primitive ſymphonies are three, 'of which the reſt conſiſt; the firſt, having a diaſtem of two tones 'and a hemitone, is called a diateſſaron; the ſecond, containing 'three tones and a hemitone, is called a diapente; the third is the

* Fabricius. Biblioth. Lat. tom. I. pag. 537.

diapaſon,

'diapaſon, and conſiſts of the two former, for it is conſtituted either 'of ſix tones, as Ariſtoxenus and other muſicians aſſert, or of five 'tones and two hemitones, as Pythagoras and the geometricians ſay, 'who demonſtrate that two hemitones do not complete the tone; 'wherefore this interval, improperly called by Plato a hemitone, 'is truly and properly a dieſis or limma.

'But to make it appear that ſounds, which are neither ſenſible to 'the eyes, nor to the touch or feeling, have meaſures, I ſhall relate 'the wonderful comment of Pythagoras, who, by ſearching into the 'ſecrets of nature, found that the ſounds of the muſicians agreed to 'the ratio of numbers; for he diſtended chords equally thick and 'equally long, by different weights, theſe being frequently ſtruck, 'and their ſounds not proving concordant, he changed the weights; 'and having frequently tried them one after another, he at length 'diſcovered that two chords ſtruck together produced a diateſſaron; 'when their weights being compared together, bore the ſame ratio 'to each other as three does to four, which the Greeks call επίτριτος, 'epitritos, and the Latins ſupertertium. He at the ſame time found 'that the ſymphony, which they call diapente, was produced when 'the weights were in a ſeſquialtera proportion, namely, that of 2 'to 3, which they called hemiolium. But when one of the 'chords was ſtretched with a weight duple to that of the other, it 'ſounded a diapaſon.

'He alſo tried if theſe proportions would anſwer in the tibiæ, and 'found that they did; for he prepared four tibiæ of equal cavity or 'bore, but unequal in length; for example, the firſt was ſix inches 'long, the ſecond eight, the third nine, and the fourth twelve; 'theſe being blown into, and each compared with the others, he 'found that the firſt and ſecond produced the ſymphony of the dia-'teſſaron, the firſt and third a diapente, and the firſt and fourth the 'diapaſon: but there was this difference between the nature of the 'chords and that of the tibiæ, that the tibiæ became graver in pro-'portion to the encreaſe of their lengths, while the chords became 'acuter by an additional augmentation of their weights; the propor-'tion however was the ſame each way.

'Theſe things being explained, though perhaps obſcurely, yet as 'clearly as I was able, I return to ſhew what Pythagoras thought con-'cerning the number of the days appertaining to the partus. Firſt, he

'ſays

'ſays there are in general two kinds of birth, the one leſſer, of ſeven 'months, which comes forth from the womb on the two hundred 'and tenth day after conception; the other greater, of nine months, 'which is delivered on the two hundred and ſeventy-fourth day.' Cenſorinus then goes on to relate from Plato that in the work of conception there are four periods, the firſt of ſix days, the ſecond of eight, which two numbers are the ratio of the diateſſaron; the third of nine, which anſwers to the diapente, and the fourth, at the end whereof the fœtus is formed, of twelve, anſwering to the diapaſon in duple proportion.' After this he proceeds to declare the relations of the above numbers in theſe words.

'Theſe four numbers, ſix, eight, nine and twelve, being added 'together, make up thirty-five; nor is the number ſix undeſervedly 'deemed to relate to the birth, for the Greeks call it τελειος, teleios, 'and we perfectum, becauſe its three parts, a ſixth, a third, and a 'half, that is one, two, three, make up itſelf; but as the firſt ſtage 'in the conception is completed in this number ſix, ſo the former 'number thirty-five being multiplied by this latter ſix, the product is 'two hundred and ten, which is the number of days required to ma-'turate the firſt kind of birth. As to the other or greater kind, it is 'contained under a greater number, namely ſeven, as indeed is alſo 'the whole of human life, as Solon writes: the practice of the Jews, 'and the ritual books of the Etruſcans, ſeem likewiſe to indicate the 'predominancy of the number ſeven over the life of man; and Hip-'pocrates, and other phyſicians, in the diſeaſes of the body account 'the ſeventh as a critical day; therefore as the origin of the other 'birth is ſix days, ſo that of this greater birth is ſeven; and as in 'the former the members of the infant are formed in thirty-five 'days, ſo here it is done in almoſt forty, and for this reaſon, forty 'days are a period very remarkable; for inſtance, a pregnant woman 'did not go into the temple till after the fortieth day; after the birth 'women are indiſpoſed for forty days; infants for the moſt part are 'in a morbid ſtate for forty days; theſe forty days, multiplied by the 'ſeven initial ones, make two hundred and eighty, or forty weeks: 'but becauſe the birth comes forth on the firſt day of the fortieth 'week, ſix days are to be ſubtracted, which reduces the number of 'days to two hundred and ſeventy-four, which number very exactly 'correſponds to the quadrangular aſpect of the Chaldeans; for as the

'ſun-

'ſun paſſes through the zodiac in three hundred and ſixty-five days
'and ſome hours; if the fourth part of this number, namely ninety-
'one days and ſome hours, be deducted therefrom, the remainder will
'be ſomewhat ſhort of two hundred and ſeventy-five days, by which
'time the ſun will arrive at that place where the quadrature has an
'aſpect to the beginning of conception. But let no man wonder
'how the human mind is able to diſcover the ſecrets of human na-
'ture in this reſpect, for the frequent experience of phyſicians
'enables them to do it.

'It is not to be doubted but that muſic has an effect on our birth;
'for whether it conſiſts in the voice or ſound only, as Socrates
'aſſerts, or, as Ariſtoxenus ſays, in the voice and the motion of the
'body, or of both theſe and the emotion of the mind, as Theophraſ-
'tus thinks, it has certainly ſomewhat in it of divine, and has a great
'influence on the mind. If it had not been grateful to the immor-
'tal Gods, ſcenical games would never have been inſtituted to appeaſe
'them; neither would the tibiæ accompany our ſupplications in the
'holy temples. Triumphs would not have been celebrated with the
'tibia; the cythara or lyre would not have been attributed to
'Apollo, nor the tibia, nor the reſt of that kind of inſtruments to
'the Muſes; neither would it have been permitted to thoſe who play
'on the tibia, by whom the deities are appeaſed, to exhibit public
'ſhews or plays, and to eat in the Capitol, or during the leſſer Quin-
'quatria*, that is on the ides of June; to range about the city, drunk,
'and diſguiſed in what garments they pleaſed. Human minds, and
'thoſe that are divine, though Epicurus cries out againſt it, acknow-
'ledge their nature by ſongs. Laſtly, ſymphony is made uſe of by
'the commanders of ſhips to encourage the ſailors, and enable them
'to bear up under the labours and dangers of a voyage; and while
'the legions are engaged in battle the fear of death is diſpelled by
'the trumpet; wherefore Pythagoras, that he might imbue his ſoul
'with its own divinity, before he went to ſleep and after he awaked
'was accuſtomed, as is reported, to ſing to the cithara; and Aſcle-
'piades the phyſician relieved the diſturbed minds of frenetics by
'ſymphony. Etophilus, a phyſician alſo, ſays that the pulſes of the
'veins are moved by muſical rhythmi; ſo that both the body and

* A feaſt in honour of Minerva.

'the

'the mind are ſubject to the power of harmony, and doubtleſs muſic 'is not a ſtranger at our birth.

'To theſe things we may add what Pythagoras taught, namely, 'that this whole world was conſtructed according to muſical ratio, 'and that the ſeven planets which move between the heavens and 'the earth, and predominate at the birth of mortals, have a rhythmical motion and diſtances adapted to muſical intervals, and emit 'ſounds, every one different in proportion to its height, which 'ſounds are ſo concordant as to produce a moſt ſweet melody, though 'inaudible to us by reaſon of the greatneſs of the ſounds, which the 'narrow paſſages of our ears are not capable of admitting.' Then follows the paſſage declaring the Pythagorean eſtimate of the diſtances of the planets and their ſuppoſed harmonical ratio, hereinbefore cited from him *.

Cenſorinus concludes his Diſcourſe on Muſic with ſaying that Pythagoras compared many other things which muſicians treat of to the other ſtars, and demonſtrated that the whole world is conſtituted in harmony. Agreeable to this he ſays Dorylaus writes that this world is the inſtrument of God: and others, that as there are ſeven wandering planets, which have regular motions, that may fitly be reſembled to a dance †.

* See it in page 178, with a diagram.

† The general opinion of the learned in former ages, touching the harmony of the ſpheres, has been mentioned in a preceding page, but there appears a diſpoſition in the modern philoſophers to revive the notion. It ſeems that Dr. Gregory thought it well founded; and Mr. Maclaurin, in conformity with his opinion, Phil. Diſcov. of Newton, pag. 35, explains it thus: 'If we ſhould ſuppoſe muſical chords extended from the ſun to 'each planet; that all theſe chords might become uniſon, it would be requiſite to en'creaſe or diminiſh their tenſions in the ſame proportions as would be ſufficient to render 'the gravities of the planets equal; and from the ſimilitude of theſe proportions the cele'brated doctrine of the harmony of the ſpheres is ſuppoſed to have been derived.'

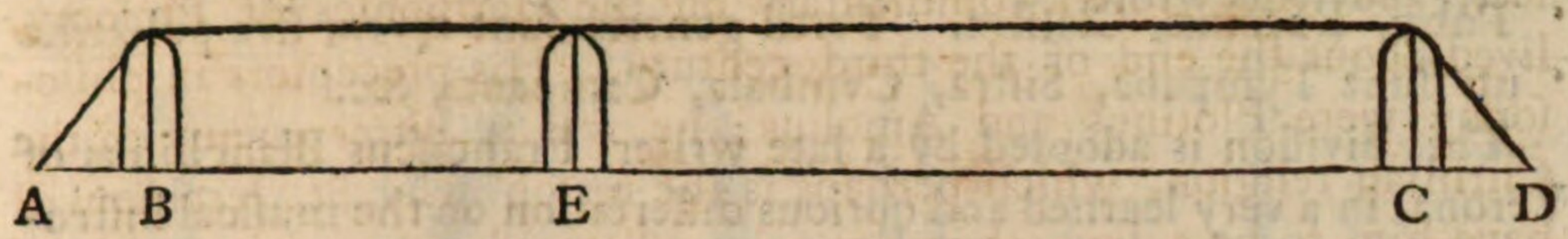
The author of a book lately publiſhed, entitled Principles and Power of Harmony, has added his ſuffrage in ſupport of the opinion. 'Certain, ſays he, as this harmonic coin'cidence is now become, till Sir Iſaac Newton demonſtrated the laws of gravitation in 'relation to the planets, it muſt have paſſed for the dream of an Utopian philoſopher.' Pag. 146.

The ſame author, pag. 145, agreeable to what Cenſorinus above aſſerts, ſays that 'there 'are traces of the harmonic principle ſcattered up and down, ſufficient to make us look 'on it as one of the great and reigning principles of the inanimate world.' Some of theſe have hereinbefore been pointed out. Vide pag. 177, in not. To the inſtances there mentioned, the following may not improperly be added. The web of a ſpider formed of threads is of an hexangular figure, and each of the threads that divide the whole into ſix triangles, may be conſidered as a beam intended to give firmneſs and ſtability to the fabric; from one to the other of theſe beams the inſect conducts lines in a parallel direc-

PORPHYRIUS, a very learned Greek philoſopher, of the Platonic ſect, and who wrote a commentary on the Harmonics of Ptolemy, lived about the end of the third century. His preceptors in philoſophy were Plotinus and Amolius; he was a bitter enemy to the Chriſtian religion, which perhaps is the reaſon why St. Jerome will have him to be a Jew; but Eunapius affirms that he was a native of Tyre, and that his true name was Malchus, which in the Syrian language ſignifies a king; and that Longinus the ſophiſt, who taught him rhetoric, gave him the name of Porphyrius, in alluſion to the purple uſually worn by kings. Beſides the Commentary on Ptolemy he wrote the lives of divers philoſophers, of which only a fragment, containing the life of Pythagoras, is now remaining; a treatiſe of abſtinence from fleſh, an explication of the categories of Ariſtotle, and a treatiſe, containing fifteen books, againſt the Chriſtian religion, which he once profeſſed, as St. Auguſtine, Socrates, and others aſſert: this latter was anſwered by Methodius, biſhop of Tyre, and afterwards by Euſebius. He died about the end of the reign of Diocleſian, and in 388 his books were burned.

With regard to his commentary, it is evidently imperfect; for whereas the treatiſe of Ptolemy is divided into three books, the ſecond whereof contains fifteen chapters, Porphyry's commentary is continued no farther than to the end of chapter ſeven of that book, concluding with the ſeries of ſounds through each of the three genera. He ſeems to have been a virulent oppoſer of the Ariſtoxenians, and like his author adheres in general to the tenets of Pythagoras. Porphyry has given a deſcription of the harmonic canon much more intelligible than that of Ptolemy, and has delineated it in the following form.

tion, which, ſuppoſing them to be ten in number, do, in conſequence of their different lengths, conſtitute a perfect decachord. Kircher, who made this diſcovery, ſays, that were theſe lines or chords capable of ſuſtaining a force ſufficient to make them vibrate, it muſt neceſſarily follow from the ratios of their lengths, that between the ſound of the outer and the innermoſt, the interval would be a diapaſon and ſemiditone; and that the reſt of the chords, in proportion to their lengths, would produce the other conſonances. Muſurg. tom. I. pag. 441.



By which it appears that a chord A D, ſtrained over the immoveable magades B and C, which are nothing more than two parallelograms, with a ſemicircular arch at the top of each, together with a movable bridge of the ſame form E, but ſomewhat higher, will be ſufficient for the demonſtration of the conſonances, and this indeed is the repreſentation which Dr. Wallis in his notes on Ptolemy has thought proper to give of it.

Dr. Wallis has contented himſelf with publiſhing a bare verſion of this author, without the addition of notes, except a few ſuch ſhort ones as he thought neceſſary to correct a vicious reading, or explain a difficult paſſage.

The works of the ſeveral authors above-named declare very fully the ancient Greek theory; their practice may in a great meaſure be judged of from the forms of the ancient inſtruments, and of theſe it may be thought neceſſary in this place to give ſome account.

The general diviſion of muſical inſtruments is into three claſſes, the pulſatile, tenſile, and inflatile; and to this purpoſe Cardinal Bellarmine, in his Expoſition of the CLth pſalm, verſe 3, ſays, 'Tria 'ſunt inſtrumentorum genera, vox, flatus, et pulſus; omnium me-'minit hoc loco propheta.'

Of the firſt are the drum, the ſiſtrum, and bells. Of the ſecond the lute, the harp, the clavicymbalum, and viols of all kinds. Of the third are the trumpet, flutes, and pipes, whether ſingle or collected together, as in the organ.

And Kircher, in his Muſurgia, preface to book VI. has this paſſage 'Omnia inſtrumenta muſica ad tria genera, ut plurimum revocantur: 'Prioris generis dicuntur εγχορδα ſive ενταταὰ, quæ nervis, ſeu chordis 'conſtant quæque plectris, aut digitis in harmonicos motus incitantur, 'ut ſunt Teſtudines, Pſalteria, Lyræ, Sambucæ, Pandoræ, Barbita, 'Nablia, Pectides, Clavicymbala, aliaque hujus generis innumera. 'Secundi generis ſunt εμφυσωμενα, πνευματικα, vel εμπνευσα, quæ inflata,

' ſeu ſpiritu incitata ſonum edunt ut Fiſtulæ, Tibiæ, Cornua, Litui,
' Tubæ, Buccinæ, Claſſica. Tertii generis ſunt κρουσα, ſive pulſatilia
' uti ſunt Tympana, Siſtra, Cymbala, Campanæ, &c.'

This diviſion is adopted by a late writer, Franciſcus Blanchinus of Verona, in a very learned and curious diſſertation on the muſical inſtruments of the ancients*; which upon the authority of ancient medals, intaglias, baſs-reliefs, and other ſculptures of great antiquity, exhibits the forms of a great variety of muſical inſtruments in uſe among the ancient Greeks and Romans, many whereof are mentioned, or alluded to, by the Latin poets in ſuch terms as contain little leſs than a preciſe deſignation of their reſpective forms. He has deviated a little from the order preſcribed by the above diviſion of muſical inſtruments into claſſes, by beginning with the inflatile ſpecies inſtead of the tenſile; nevertheleſs his diſſertation is very curious and ſatisfactory, and contains in it a detail to the following effect.

One of the moſt ſimple muſical inſtruments of the ancients is the Calamus paſtoralis, made of an oaten reed; it is mentioned by Virgil and many others of the Latin poets, and by Martianus Capella. See the form of it plate I. fig. 1.

Other writers mention an inſtrument of very great antiquity by the name of Oſſea tibia, a pipe made of the leg-bone of a crane. Fig. 2.

The Syringa or or pipe of Pan is deſcribed by Virgil, and the uſe of it by Lucretius, lib. V.

Et ſupra calamos unco percurrere labro.

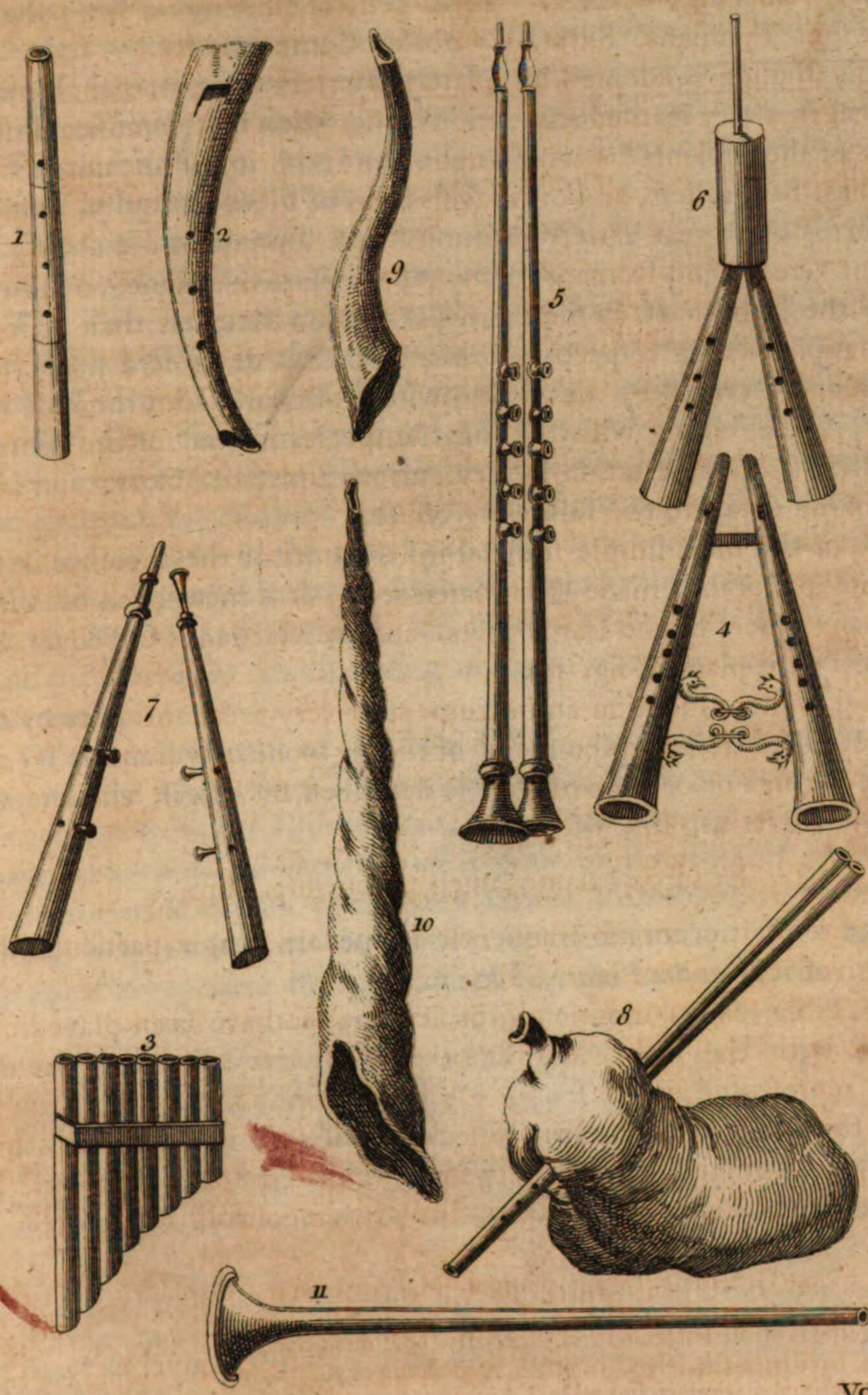
The figure of it occurs ſo frequently in medals, that a particular deſcription of it is unneceſſary. Fig. 3.

The Tibiæ pares, mentioned by Terence to have been played on, the one with the right, and the other with the left hand, are diverſely repreſented in Merſennus De Inſtrumentis harmonicis, pag. 7, and in the Diſſertation of Blanchinus now citing; in the former they are yoked together towards the bottom, and at the top, as fig. 4. In the latter they are much ſlenderer, and are not joined. Fig. 5. †

* De tribus Generibus Inſtrumentorum Muſicæ veterum Organicæ, Diſſertatio; Romæ, 1742.

† The tibiæ of the ancients, and eſpecially thoſe mentioned in the titles of Terence's comedies, have been the ſubject of much learned enquiry. Caſpar Bartholinus the anatomiſt has written a whole volume De Tibiis Veterum. Ælius Donatus, a Latin grammarian, and the preceptor of St. Jerome, ſays that the tone of the tibiæ dextræ was grave, and

Plate I. *to front page 244.*



The author laſt mentioned ſpeaks alſo of other pipes, namely, the Tibiæ bifores, fig. 6, the Tibiæ gemine, fig. 7, inſtruments uſed in theatrical repreſentations; the latter of theſe ſeem to be the Tibiæ impares of Terence: he alſo deſcribes the Tibiæ utricullariæ, or bag-pipes, fig. 8, anciently the entertainment of ſhepherds and other ruſtics.

The Horn, fig. 9, was anciently uſed at funeral ſolemnities; it is alluded to by Statius, Theb. lib. VI.

The ancient Buccina or horn-trumpet, fig. 10, is mentioned by Ovid, Vegetius, Macrobius, and others.

The Tuba communis, ſeu recta, ſo called in contradiſtinction to the Tuba ductilis, is of very ancient original, it was formerly, as now, made of ſilver or braſs, of the form fig. 11. Blanchinus heſitates not to aſſert that the two trumpets of ſilver which God commanded Moſes to make in the wilderneſs were of this form *. It ſeems that the trumpet has retained this figure without the leaſt external diverſity, ſo low down at the year 1520; for in a very curious picture at Windſor, ſuppoſed to be of Mabuſe, repreſenting the interview between Ardres and Guiſnes, of Henry VIII. and Francis I. are trumpets preciſely correſponding in figure with the Tuba recta above referred to.

Of the inſtruments of the ſecond claſs, comprehending the tenſile ſpecies, the Monochord is the moſt ſimple. This inſtrument is mentioned by Ariſtides Quintilianus, and other ancient writers, but we have no authentic deſignation of it prior to the time of Ptolemy, it nevertheleſs is capable of ſo many forms, that any inſtrument of one ſtring only anſwers to the name; for which reaſon ſome have not ſcrupled to repreſent the monochord like the bow of Diana.

and adapted to the ſerious parts of the comedy; and that that of the tibiæ ſiniſtræ, and alſo of the tibiæ ſarranæ, or Tyrian pipes, was light and chearful. 'Dextræ tibiæ ſua gravitate 'ſeriam comediæ dictionem pronunciabant. Siniſtræ et ſarranæ hoc eſt Tyriæ acuminis 'ſuavitate jocum in comedia oſtendebant. Ubi autem dextrâ et ſiniſtrâ acta fabula in-'ſcribebatur miſtim jocos et gravitatem denunciabat.' Donat. Fragm. de Traged. & Comed. The abbé du Bos ſays that this paſſage explains that other in Pliny, where it is ſaid that the ancients to make left-handed pipes, took the bottom of that very reed, the top whereof they had before uſed for the right-handed. The ſenſe of this paſſage is manifeſt; but it does not ſtrictly agree with what Donatus ſays, unleſs it can be ſuppoſed that, contrary to the order of nature, the reeds were ſmall at bottom, and grew tapering upwards.

* 'Make thee two trumpets of ſilver; of an whole piece ſhalt thou make them, that thou 'mayeſt uſe them for the calling of the aſſembly, and for the journeying of the camps.' Numbers, chap. x. verſe 2.

Figures 1, 2, plate II. are the Lyre of three and four chords, aſcribed to Mercury by Nicomachus, Macrobius, Boetius, and a number of other writers, the forms whereof are here given from ancient ſculptures in and about Rome, referred to by Blanchinus; as are alſo thoſe fig. 3 and 4, repreſenting the one a Lyre with ſeven chords, and the other one with nine.

Fig. 5. is the Lyre of Amphion, and 6. the plectrum, with which not only this, but every ſpecies of the lyre was ſtruck, as may be collected from the following paſſage in Ovid.

Inſtructamque fidem gemmis et dentibus Indis
Suſtinet à lævâ: tenuit manus altera plectrum.
Artificis ſtatus ipſe fuit, tum ſtamina docto
Pollice ſollicitat: quorum dulcedine captus
Pana jubet Tmolus citheræ ſubmittere cannus.

Met. lib. xi. l. 167. *

* It is very probable that the uſe of the bow, with which the viol ſpecies of inſtruments is ſounded, was borrowed from a practice of the ancients. Of the many kinds of lyre among them, it ſeems that they had one, in which the fingers of one hand were employed in ſtopping the ſtrings, at the inſtant that they were ſtricken with a ſtick held in the other.

Virgil intimates a practice ſomewhat like this in the following paſſage of the Æneid:

Nec non Threïcus longa cum veſte ſacerdos
Obloquitur numeris ſeptem diſcrimina vocum:
Jamque eadem digitis, jam pectine pulſat eburno.

Lib. VI. l. 645.

The Thracian bard, ſurrounded by the reſt,
There ſtands conſpicuous in his flowing veſt,
His flying fingers, and harmonious quill,
Strike ſev'n diſtinguiſh'd notes, and ſev'n at once they fill.

Dryden's tranſlation, book VI. l. 877.

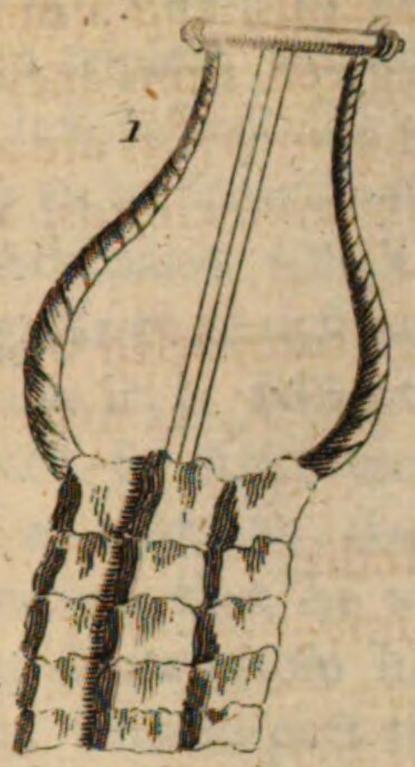
From which it at leaſt appears, that the inſtrument was placed in a horizontal poſition, and that the ſtrings were ſtruck, not by the fingers, but with a plectrum, which might be a quill or a bow, or almoſt any other thing fit for the purpoſe.

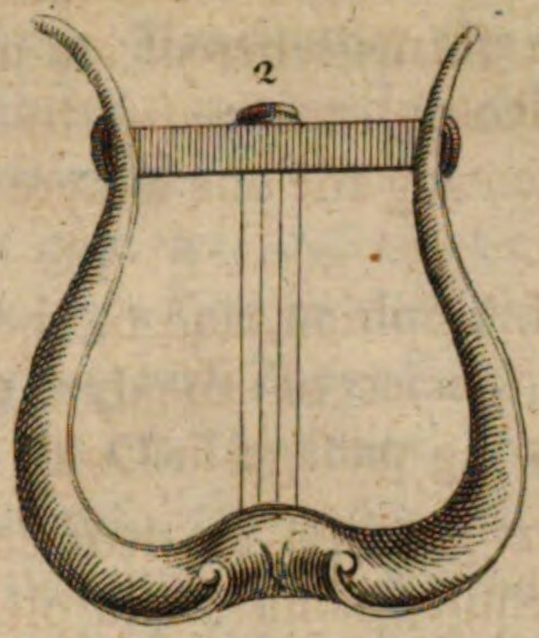
Plato, in his treatiſe De Legibus VII. 794. Ed. Serr. adviſes to train up children to uſe the right and the left hand indifferently. In ſome things, ſays he, we can do it very well, as when we uſe the lyre with the left hand and the ſtick with the right. Dr. Jortin ſays it may be collected from this, that the fingers of the left hand were occupied in ſome manner upon the ſtrings, elſe barely to hold a lyre ſhewed no very free uſe of the left hand; and it appears from Ptolemy, II. 12, that they uſed both hands at once in playing upon the lyre, and that the fingers of the left were employed, not in ſtopping, but in ſtriking the ſtring.

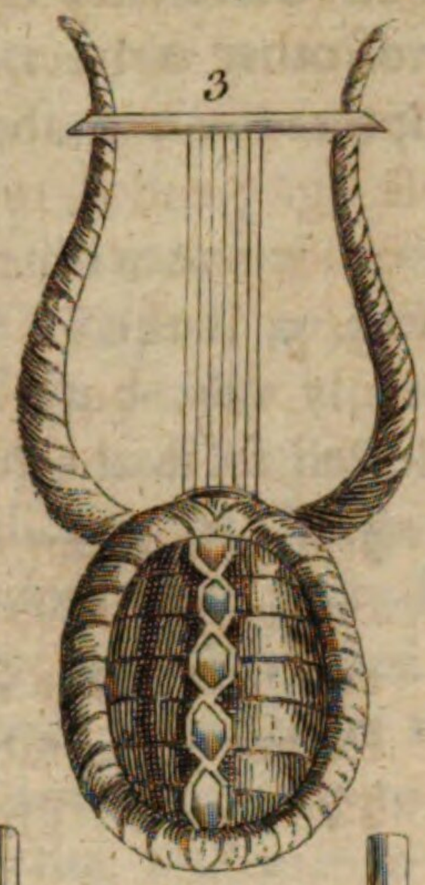
But ſee the figure of an ancient ſtatue, repreſenting Apollo playing on the lyre, fig. 10, plate III. which ſeems very clearly to evince the practice above ſpoken of.

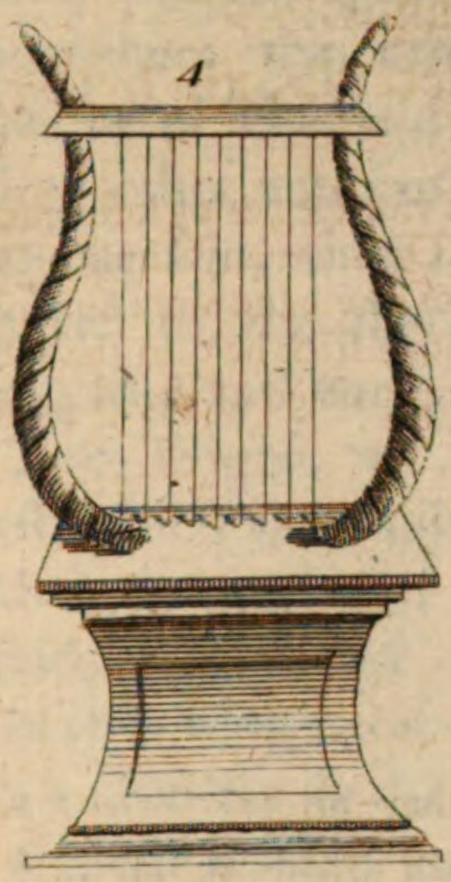
Upon this relic of antiquity, a drawing whereof was found in the collection of the late Mr. N. Haym, it is obſervable that the lyre is of a form very nearly reſembling the violin,

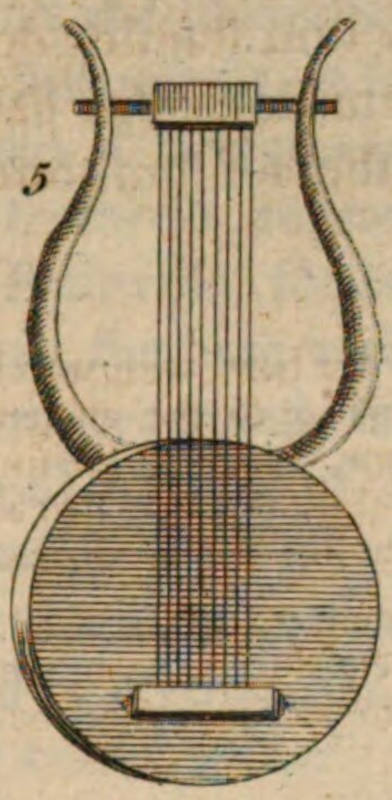
Plate II. *to front page 246.*


1

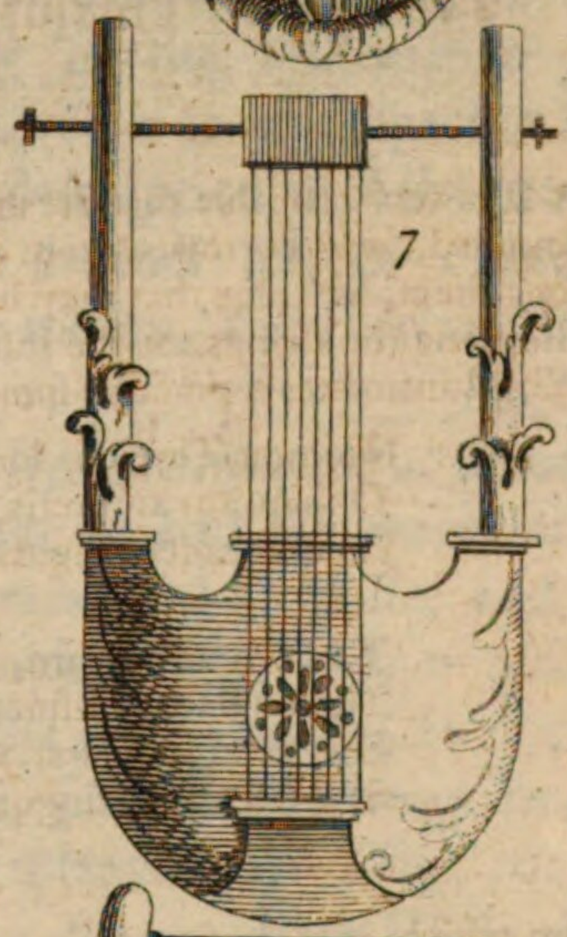

2

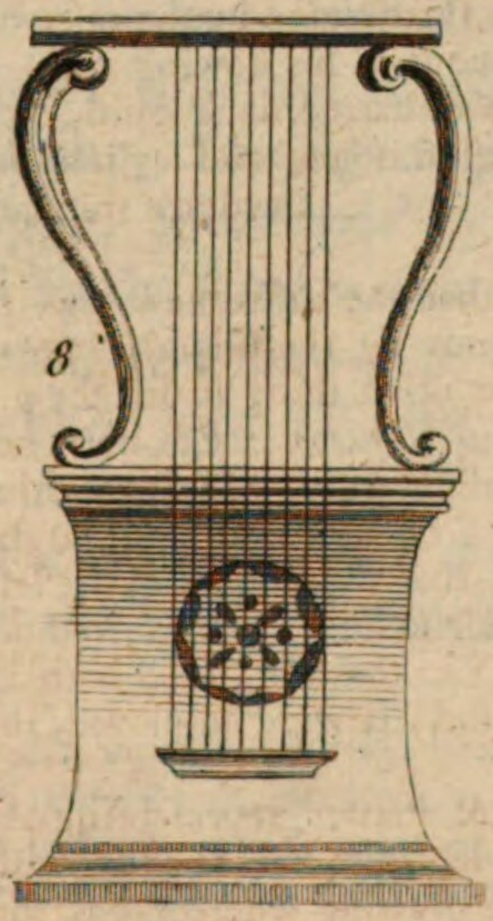

3

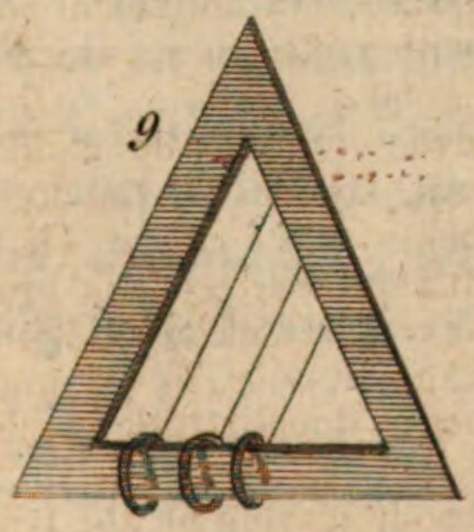

4


5

6


7


8


9

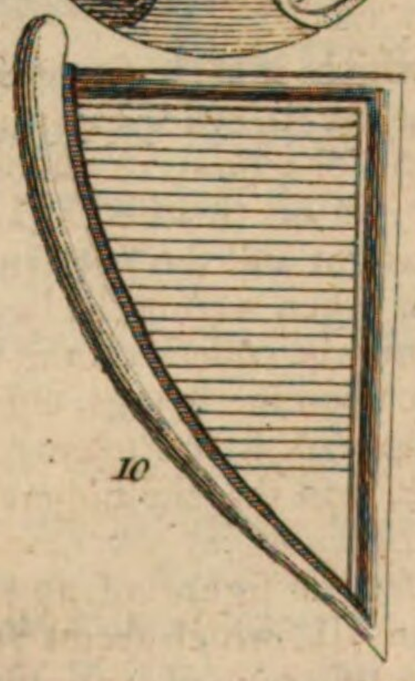

10

Fig. 7 and 8 are other forms of the Lyre in a ſtate of improvement.

Fig. 1 and 2, plate III. are two different repreſentations of the Lyra triplex, the one from Blanchinus, the other from a writer of far leſs reſpectable authority; concerning this inſtrument it is neceſſary to be ſomewhat particular.

Athenæus, lib. XIV. cap. xv. deſcribes an inſtrument of a very ſingular conſtruction, being a lyre in the form of a tripod, an invention as it is ſaid of Pythagoras Zacynthius. This perſon is mentioned by Ariſtoxenus, in his Elements, page 36; and Meibomius, in a note on the paſſage, ſays, on the authority of Diogenes Laertius, that he was the author of Arcana Philoſophiæ, and adds, that it was from him that the proverbial ſaying, ipſe dixit, had its riſe; with reſpect to the inſtrument, it is exhibited, plate III. in two forms, the firſt taken from a ſarcophagus at Rome, referred to by Blanchinus, the other from an engraving in the Hiſtoire de la Muſique of Monſieur de Blainville, for which it is to be ſuſpected he had no other authority than the bare verbal deſcription of Athenæus, who has ſaid, that it comprehended three diſtinct ſets of chords, adjuſted to the three moſt ancient of the modes, the Dorian, the Phrygian, and the Lydian.

The Trigon, an inſtrument mentioned by Nicomachus, among thoſe which were adjuſted by Pythagoras, after he had diſcovered and ſettled the ratios of the conſonances. It was uſed at feaſts, and it is ſaid, was played on by women, and ſtruck either with a quill, or beaten with little rods of different lengths and weights, to occaſion a diverſity in the ſounds. The figure 9, plate II. is taken from an ancient Roman anaglyph, mentioned by Blanchinus. Fig. 10. is alſo a Trigon, deſcribed by the ſame author; fig. 9, plate III. is the reverſe of an ancient medal, and ſhews the manner of playing on it.

The Cymbals of Bacchus, plate III. fig. 3. were two ſmall braſs veſſels, ſomewhat in the form of a ſhield, which being ſtruck together by the hands, gave a ſound. The well-known ſtatue of the dancing faun has one of theſe in each hand.

violin, as having a body, and alſo a neck, which is held in the left hand; the inſtrument in the right, undoubtedly anſwers to the modern bow, with this difference, that its uſe was percuſſion and not friction, which latter is a modern and noble improvement; the poſition of the inſtrument deſerves to be remarked, as it correſponds exactly with the viol di braccio.

The

The Tympanum leve, fig. 4, an inſtrument yet known by the name of the Tambouret, and frequently uſed in dancing, was alſo uſed to ſing to; it is diſtinguiſhed by Catullus, Ovid, Suetonius, St. Auguſtine, and Iſidore of Sevil, from the great brazen drum, properly ſo called, this abovementioned, was covered with the ſkin of ſome animal, and was ſtruck, either with a ſhort twig or with the hand; as fig. 5, plate III.

Crotala, fig. 6. Theſe were inſtruments alſo of the pulſatile kind. The Crotalum was made of a reed, divided into two by a ſlit from the top, extending half way downwards: the ſides thus divided being ſtruck one againſt the other with different motions of the hands, produced a ſound like that which the ſtork makes with her bill, wherefore the ancients gave that bird the epithet of Crotaliſtria, i. e. Player upon the Crotalum *; and Ariſtophanes calls a great talker a Crotalum.

Mention is made by ſome writers on muſic, of an inſtrument of forty chords, called, from the name of its inventor, the Epi-

* Pauſanias relates, that Hercules did not kill the Stymphalides with his arrows, but that he frighted, and drove them away with the noiſe of the crotala, the conſequence whereof, ſuppoſing the relation to be true, is, that the crotalum muſt be a very ancient inſtrument. Ovid joins the crotalum with the cymbals.

Cymbala cum crotalis prurientiaque arma Priapo
Ponit, et adducit tympana pulſa manu.

It appears by an ancient poem, entitled Copa, by ſome aſcribed to Virgil, that thoſe who played with the crotala danced at the ſame time. It farther appears, that in theſe dances, which were chiefly of women, ſuch a variety of wanton geſticulations and indecent attitudes and poſtures were practiſed, that Clemens Alexandrinus ſays, that the uſe of theſe inſtruments ought to be baniſhed from the feſtivals of all chriſtians. And the ſame might have been ſaid of the cymbals. See figures 7, 8, plate III.

Some authors reſemble the crotala to the caſtanets of the Spaniards, or perhaps of the Moors; for caſtanets are ſuppoſed to be of Mooriſh invention; but of theſe the crumata of the ancients ſeem more nearly to approach. Theſe were made of bones, or the ſhells of fiſh. Scaliger obſerves, upon the abovementioned poem, that they were very common among the Spaniards, eſpecially the inhabitants of the province of Bœtica [Andaluſia] about Cadiz, to which Martial alludes.

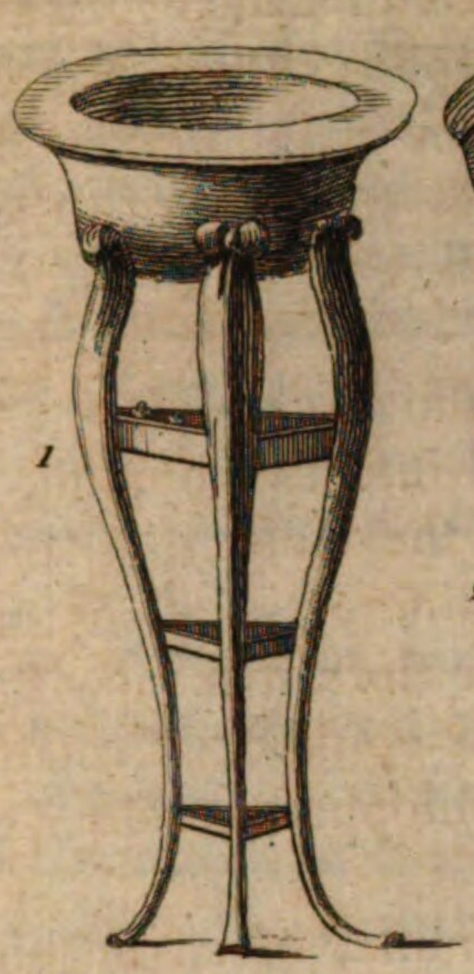
Nec de Gadibus improbis puellæ
Vibrabunt ſine fine prurientes
Laſcivos docili tremore lumbos. Lib. V. epigr. lxxix.

The ſame poet elſewhere ſpeaks of the crumata in theſe words,

Edere laſcivos ad Bœtica cruſmata geſtus,
Ed Gaditanis ludere docta modis. Lib. VI. epigr. lxxi.

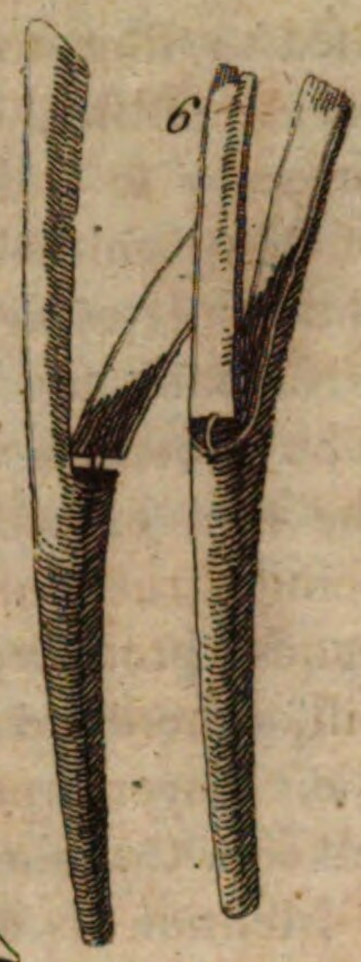
From which two paſſages, it appears clearly, that the above cenſure of Clemens Alexandrinus was well grounded.

gonium.


1

2

3


6

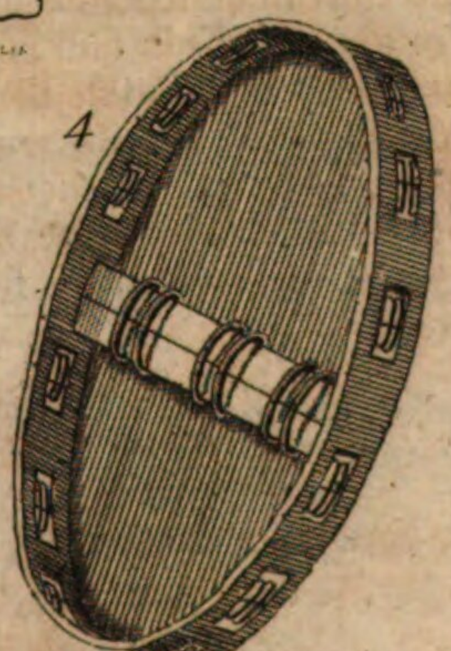
8

7

5

10

9


4

gonium. Epigonius was a native of Ambracia, a city of Epirus, and a citizen of Sicyon, a town of Peloponneſus. He is mentioned together with Laſus Hermionenſis, by Ariſtoxenus, in his Elements, pag. 3. And Porphyry makes him the head of one of thoſe many ſects of muſicians that formerly ſubſiſted, giving him the priority even of Ariſtoxenus, in theſe words. 'There were many ſects, ſome 'indeed before Ariſtoxenus, as the Epigonians, Damonians, Erato-'cleans, Agenorians, and ſome others; which he himſelf, makes 'mention of; but there were ſome after him, which others have 'deſcribed, as the Archeſtratians, Agonians, Philiſcians, and Her-'mippians.'

Julius Pollux, in his Onomaſticum, lib. IV. cap. ix. ſpeaking of the inſtruments invented by certain nations, ſays, that the Epigonium obtained its name from Epigonius, who was the firſt that ſtruck the chords of muſical inſtruments without a plectrum *. The ſame author adds, that the Epigonium had forty chords, as the Simicum had thirty-five. Athenæus, lib. IV. ſpeaks to the ſame purpoſe.

As to the Simicum, nothing more is known about it, than that it contained thirty-five chords. Vincentio Galilei, with good reaſon, ſuppoſes it to be ſomewhat more ancient than the epigonium. Of both theſe inſtruments he has ventured to give a repreſentation, in his dialogue on ancient and modern muſic; but it is very much to be doubted, whether he had any authority from antiquity for ſo doing. The form which he has aſſigned them ſeverally, reſembles nearly that of an upright harpſichord, which ſeems to indicate, that when played on, it was held between the legs of the muſician, different perhaps from the harp, with the grave chords near and the acute remote from him.

The foregoing account comprehends the principal inſtruments in uſe among the ancient Greeks and Romans, ſo far as the reſearches of learned and inquiſitive men have ſucceeded in their attempts to

* Plutarch in his dialogue before cited, relates that Olympus introduced the plectrum into Greece, which it is ſuppoſed was then deemed a uſeful invention. Certainly the lyre was originally touched by the fingers, and all that can be meant here, is, that Epigonius recurred to the primitive method, and played on his inſtrument, as the harp is now played on with the fingers; between which, and the touch of a plectrum or quill, the difference is very wide, as may be diſcovered by a compariſon of the lute or harp with the harpſichord.

recover them; their forms ſeem to be thereby aſcertained beyond the poſſibility of a doubt, and theſe it may be ſaid, declare the ſtate of the ancient muſical practice, much more ſatisfactorily than all the hyperbolical relations extant, of its efficacy and influence over the human paſſions; and leave it an unqueſtionable fact, that the diſcoveries of Pythagoras, and the improvements made by the Greeks, his ſucceſſors, terminated in a theory, admirable in ſpeculation it is true, but to which ſuch inſtruments were adapted, as would have diſgraced any performance, even in the leaſt enlightened period, ſince the invention of that ſpecies of harmony, which has been the delight of later ages.

A GENERAL HISTORY OF THE SCIENCE and PRACTICE OF MUSIC.

BOOK III. CHAP. I.

THE gradual declenſion of learning which had begun before the time of Porphyry, the laſt of the Greek muſical writers, and above all, the ravages of war, and the then embroiled ſtate of the whole civilized world, put an end to all farther improvements in the ſcience of harmonics; nor do we find, that after this time it was made a ſubject of philoſophical enquiry: the ſucceeding writers were chiefly Latins, who, as they were for the moſt part followers of the Greeks, contributed but very little to its advancement; and, for reaſons which will hereafter be given, the cultivation of muſic became the care of the clergy; an order of men, in whom the little of learning then left, in a few ages after the eſtabliſhment of chriſtianity centered.

But before we proceed farther to trace the progreſs of the ſcience, it is proper to remark, that the writings of the Greeks not only leave us in great uncertainty as to the ſtate of muſic in other countries, but that they do not exclude the poſſibility of its having arrived at a great degree of perfection, even before that diſcovery of the conſonances, which is by all of them allowed to be the very baſis of the Greek ſyſtem. For let it be remembered, that Pythagoras is ſuppoſed to have lived ſo late as A. M. 3384, which is about 560 years before the birth of Chriſt; and that long before his time, ſuch

effects were aſcribed to muſic, as well by the ſacred as profane hiſtorians, as are utterly inconſiſtent with the ſuppoſition, that it was then in its infancy. It were endleſs to enumerate the many paſſages in ſacred writ, declaring the power of muſic: the ſtory of David and Saul, and the effects attributed to the harp; but more eſpecially the frequent mention of inſtruments with ten ſtrings, would lead us to think, that the art had arrived to a ſtate of greater perfection than the writers abovementioned ſuppoſe. Here then ariſes a queſtion, the ſolution whereof is attended with great difficulty; namely, whether the Jews, not to mention the various other nations, that had ſubſiſted for many ages, previous to the times from whence we begin our account, in a ſtate of very improved civilization, had not a muſical theory? or is it to be conceived, that mankind, with whoſe frame and ſtructure, with whoſe organs and faculties, harmony is ſhewn to be connatural, could remain for ſo many centuries in an almoſt total ignorance of its nature and principles?

To this it is anſwered, that the knowledge of the ſtate, and condition of paſt times, is deducible, with any degree of certainty, only from hiſtory; that the information communicated by the means of writing, muſt depend on an infinite variety of circumſtances, ſuch as a diſpoſition in men of ability to communicate that information which is derived from a long courſe of ſtudy, the permanency of language, a faithful and uncorrupt tranſmiſſion of facts, and an abſence of all thoſe accidents, that in the courſe of events hinder the propagation of knowledge; and wherever theſe fail, the progreſs of human intelligence muſt neceſſarily be intercepted. To obſtructions ariſing from one or other of theſe cauſes, is to be imputed that impenetrable obſcurity, in which the events of the earlier ages lie involved; an obſcurity ſo intenſe, that no one preſumes to trace the origin of any of the arts, and a vaſt chaſm is ſupplied by the mythologiſts, the poets, and that ſpecies of hiſtory which we diſtinguiſh from what is truly authentic and worthy of credit by the epithet of fabulous; even antiquity itſelf, which ſtamps a value on ſome ſort of evidence, will in many caſes diminiſh the credit of an hiſtorian; and mankind have not yet ſettled what degreee of aſſent is due to the teſtimony of the moſt ancient of all profane hiſtorians, the venerable Herodotus.

Admit-

Admitting as a fact, that Egypt in the infancy of the world, was as well the ſeat of learning as of empire; and admitting alſo, the learning of the Perſian Magi, the Indian Brachmans, and other people of the Eaſt; not to mention the Phœnicians and the Chineſe, to be as great as ſome pretend, who have magnified it to a degree that exceeds the bounds of moderate credulity; nevertheleſs, the more ſober reſearchers into antiquity, have contented themſelves with a retroſpect limited by the time, when philoſophy began to flouriſh in Greece; and it is only on the writers of that country that we can depend.

An inveſtigation of the Jewiſh theory would be a fruitleſs attempt, but of their practice we are enabled to form ſome judgment, by the ſeveral paſſages in the Old Teſtament that declare the names and number of the Hebrew inſtruments, and mention the frequent uſe of them in ſacrifices, and other religious ſolemnities; but it is to be obſerved, that the correſpondence of the names of their inſtruments, with the names of thoſe in uſe in modern times, is a circumſtance from which no argument in their favour can be drawn, for a reaſon herein before given.

Merſennus, and after him Kircher, whoſe elaborate reſearches into the more abſtruſe parts of ancient literature, render him in ſome particulars a reſpectable authority, have exhibited the forms of many of the ancient Jewiſh muſical inſtruments: the latter of theſe authors profeſſes to have gone to the fountain head for his intelligence, and the reſult of an attentive peruſal of as many of the Rabbinical writers and commentators on the Talmud as he could lay his hands on he has given to the public in the Muſurgia, tom. I. pag. 47. How far the authorities adduced by him will warrant ſuch a preciſe deſignation of their reſpective forms, as verges in ſome inſtances too near our own times, is left to the deciſion of thoſe who ſhall have curioſity enough to peruſe them; but leſt it ſhould be ſaid that the ſubject is too important to be paſſed over in ſilence, the ſubſtance of what he has delivered on this head is here given.

He ſays that the author of a treatiſe entitled Schilte Haggiborim, i. e. the Shield of the Mighty, who he elſewhere makes to be Rabbi Hannaſe, treats very accurately on the muſical inſtruments of the Hebrews, and reckons that they were thirty-ſix in number, and of the pulſatile kind, and that David was ſkilled in the uſe of them all.

Kircher

Kircher however does not ſeem to acquieſce altogether in the firſt of theſe opinions, for he proceeds to a deſcription de inſtrumentis Hebreorum Polychordis ſive Neghinoth; theſe it ſeems, according to his author above-named, were of wood, long and round, conſiſting of three ſtrings made of the inteſtines of beaſts; the inſtruments had holes bored underneath them; and, to make them ſound, the ſtrings were rubbed with a bow compoſed of the hairs of a horſe's tail, well extended and compacted together. Kircher ſpeaks particularly of the Pſaltery, or Nablium, the Cythara, or, which is the ſame thing, the Aſſur, Nevel, Chinnor, the Machul, and the Minnin. He ſays that no one has rightly deſcribed the Pſaltery of David, and that ſome have thought that the word rather denoted certain genera of harmony, or modulations of the voice, than any kind of inſtrument: that according to Joſephus it had twelve ſounds, and was played on with the fingers; that Hilarius, Didymus, Baſilius, and Euthymius call it the ſtraiteſt of all muſical inſtruments—that Auguſtine ſays it was carried in the hand of the player, and had a ſhell or concave piece of wood on it that cauſed the ſtrings to reſound—that Hieronymus deſcribes this inſtrument as having ten ſtrings, and reſembling in its form a ſquare ſhield—that Hilarius will have it to be the ſame with the Nablium. Kircher himſelf is certain that it was a ſtringed inſtrument, and cites Suidas to prove that the word Pſalterium is derived from Pſallo, to ſtrike the chords with the ends of the fingers. He farther ſays, that many writers ſuppoſe it to have had a triangular form, and to reſemble the harp of David, as commonly painted in pictures of him; and that ſome are expreſs in the opinion that the Pſalterium and the Nablium, as being ſtruck with the fingers of both hands, were one and the ſame inſtrument; and to this purpoſe he cites the following paſſage from Ovid.

Diſce etiam duplici genialia Naulia palmâ
Verrere: conveniunt dulcibus illa modis.

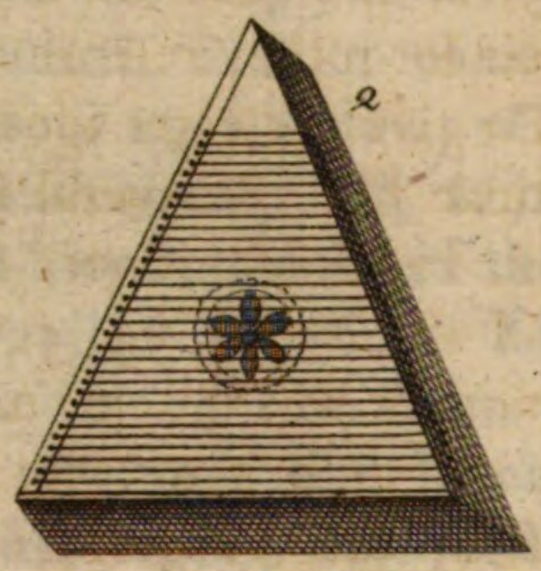
ART. AMAT. lib. III. l. 327.

The Nevel, notwithſtanding the reſemblance between its name and that of the Nablium, and the confuſion which Kircher has created by uſing them promiſcuouſly, clearly appears to have been a different inſtrument; for he ſays it was in the form of a trapezium; and the Nablium, which he has taken great pains to prove to be the

ſame

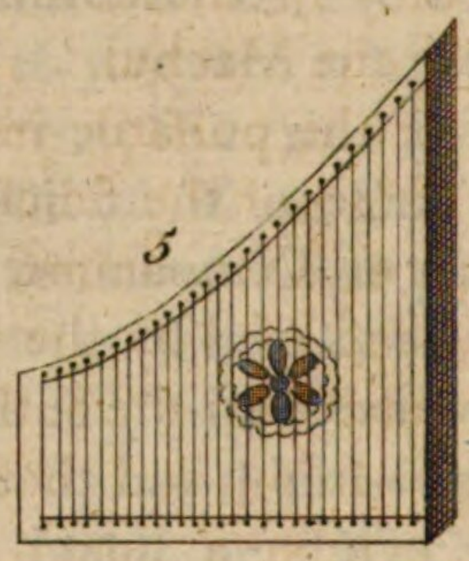
Plate IV. *to front page 255.*

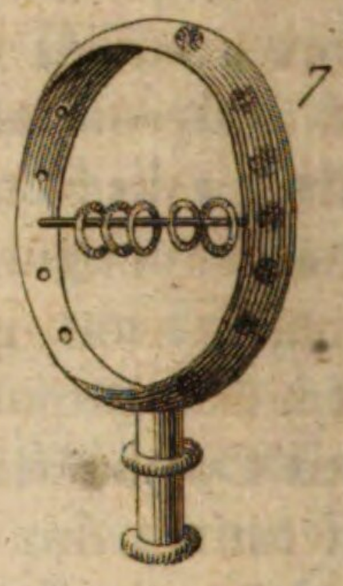
1

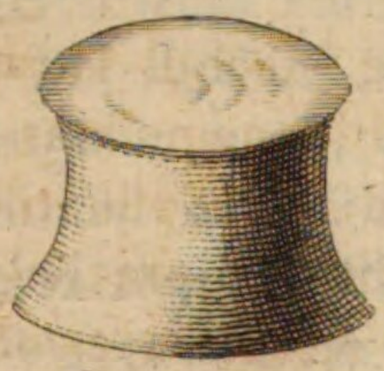

2

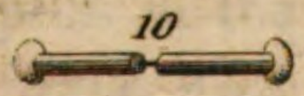
3

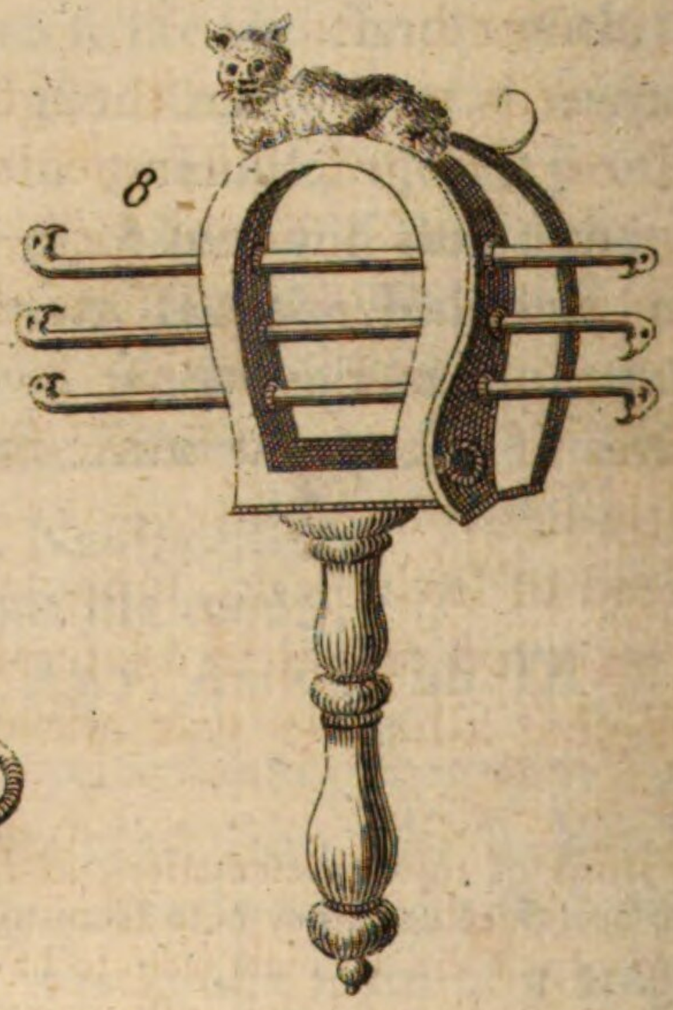
4

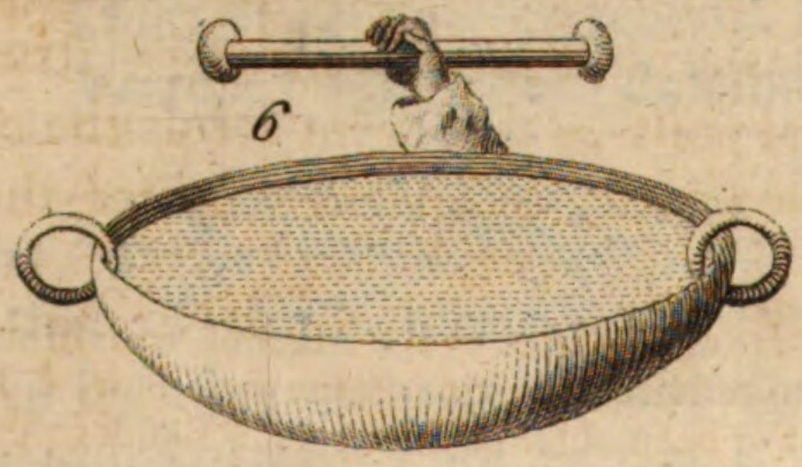

5


7


9


10


8


6

ſame with the Pſalterium, he ſhews to have been of a ſquare form. Of the Aſſur, he only ſays that it had ten chords; the Chinnor he ſuppoſes to have had thirty-two, the Machul ſix, and the Minnin three or four; and that in their form they reſembled, the one the Viol and the other the Chelys. To give a clearer idea, he has exhibited, from an old book in the Vatican library, ſeveral figures repreſenting the Pſalterium, plate IV. fig. 1; the Chinnor, fig. 2, the Machul, fig. 3, the Minnin fig. 4, and the Nevel, fig. 5 *.

Kircher ſpeaks alſo of another inſtrument mentioned by Rabbi Hannaſe, who it ſeems was the author of the book before cited, Schilte Haggiborim, and alſo in the Targum, called Haghniugab, conſiſting of ſix ſtrings, and reſembling the greater Chelys or Viol di Gamba, differing from it only in the number of its chords: he ſays it is often confounded with the Machul.

He next proceeds to treat of the pulſatile inſtruments of the Hebrews, in contradiſtinction to thoſe of the fidicinal or ſtringed kind; and firſt he ſpeaks of the Thoph or Tympanum, plate IV. fig. 6, an inſtrument of Egyptian original, and uſed by the prieſts of that country in their public worſhip. He relates on the authority of Rabbi Hannaſe that it had the likeneſs of a ſhip; and that by the Greeks it was alſo called Cymbalum, from cymba a boat: he adds that it was covered with the ſkin of an animal, and was beat on with a peſtle or rod of iron or braſs.

He proceeds to ſay that though the Machul is ranked among the fidicinal or ſtringed inſtruments, this name was given to an inſtrument of a very different form, and of the pulſatile kind; nay, he adds that Rabbi Hannaſe aſſerts that it was preciſely the ſame with the Siſtrum of the Egyptians, or the Krouſma of the Greeks; and that it was of a circular form, made of iron, braſs, ſilver, or gold, with little bells hung round it. Kircher corrects this deſcription, and inſtead of little bells, ſuppoſes a number of iron rings, ſtrung as it were on a rod or bar in a lateral poſition that went acroſs the circle. He ſays that a handle was affixed to it, by means whereof the in-

* The truth of this repreſentation, ſo far as it relates to the Machul and Minnin, is ſtrongly to be ſuſpected; they both ſeem to require the aid of the hair bow, a kind of plectrum to which the ancients ſeem to have been abſolute ſtrangers. Beſides their near reſemblance to the lute and viol, inſtruments which it is ſuppoſed had their origin in Provence, is a ſtrong argument againſt their antiquity.

ſtrument

ſtrument was flung backwards and forwards, and emitted a kind of melancholy murmur, ariſing from the colliſion of the rings, as well againſt each other as againſt the ſides, the circle, and the bar on which they moved, plate IV. fig. 7. He adds, that the Thoph, or rather Siſtrum of the Hebrews was thus conſtructed, and that the virgins every where made uſe of it in the dances of the Siſtri, as we read in the books of Exodus and Judges, that Mary the ſiſter of Moſes, and the daughter of Jeptha did: and he farther ſays, that according to accounts which he has received from credible witneſſes, the Syrians in his time preſerved the uſe of the Siſtrum in Paleſtine *.

Gnets Beruſim was another of the Hebrew pulſatile inſtruments; it ſeems by Kircher that there was ſome controverſy about the form of it, but that Rabbi Hannaſe repreſents it as nothing more than a piece of fir in ſhape like a mortar. He ſays there belonged to it a peſtle of the ſame wood, with a knob at each end, and in the middle thereof a place for the hand to graſp it: that thoſe that beat on the inſtrument held it in the left hand and ſtruck with the right on the edge and in the middle, uſing the knobs alternately. Plate IV. fig. 9, 10. Kircher compares this inſtrument to the Crotalum above deſcribed, but ſeemingly with little propriety; and to the Gnaccari of the Italians, of which word, conſidered as a technical term, it is hard to find the meaning.

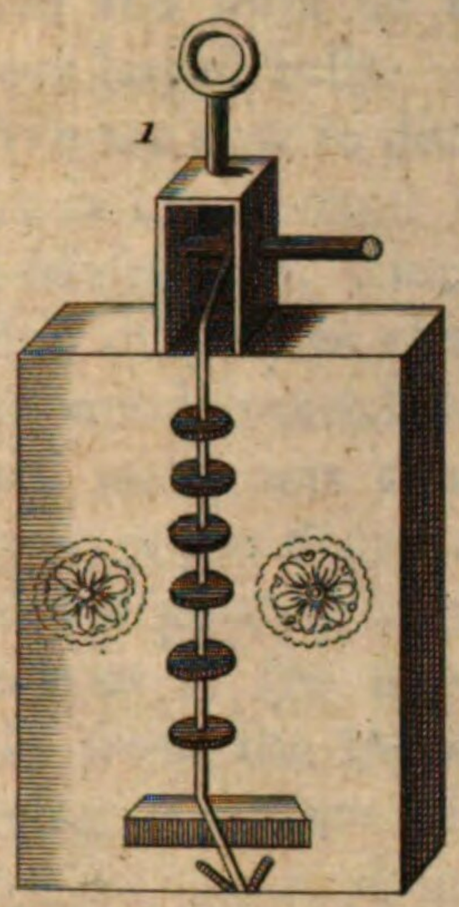
Minagnghinim was the name of another of the Hebrew pulſatile inſtruments, which, according to Rabbi Hannaſe, was a certain ſquare table of wood, having a handle ſo fitted as conveniently to be held by it. On the table were balls of wood or braſs, through which was put either an iron chain or an hempen chord, and this was ſtretched from the bottom to the top of the table. When the inſtrument was ſhook, the ſtriking of the balls occaſioned a very clear ſound, which might be heard at a great diſtance. See the repreſentation which Kircher gives of it, plate V. fig. 1.

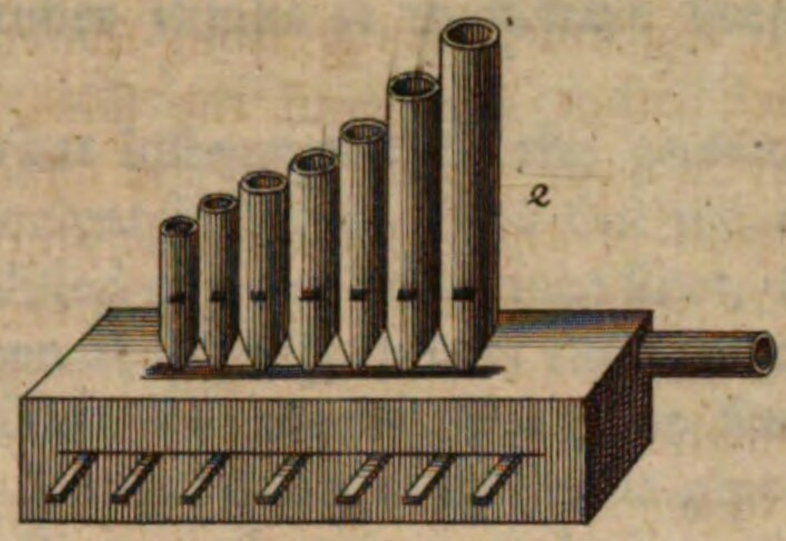
Magraphe Tamid, another of the pulſatile inſtruments of the Hebrews, is conjectured by Kircher to have been uſed for convoking the prieſts and Levites together in the temple: it is ſaid to have emitted

* The invention of the Siſtrum is not to be aſcribed to the Jews: it is generally ſuppoſed to be of Egyptian original. There are ſome forms of it, as that in particular, plate IV, fig. 8, which bears on it a figure of one of thoſe many brute animals to which this ſuperſtitious and idolatrous people paid divine honours.

a pro-

Plate V. *to front page 256.*

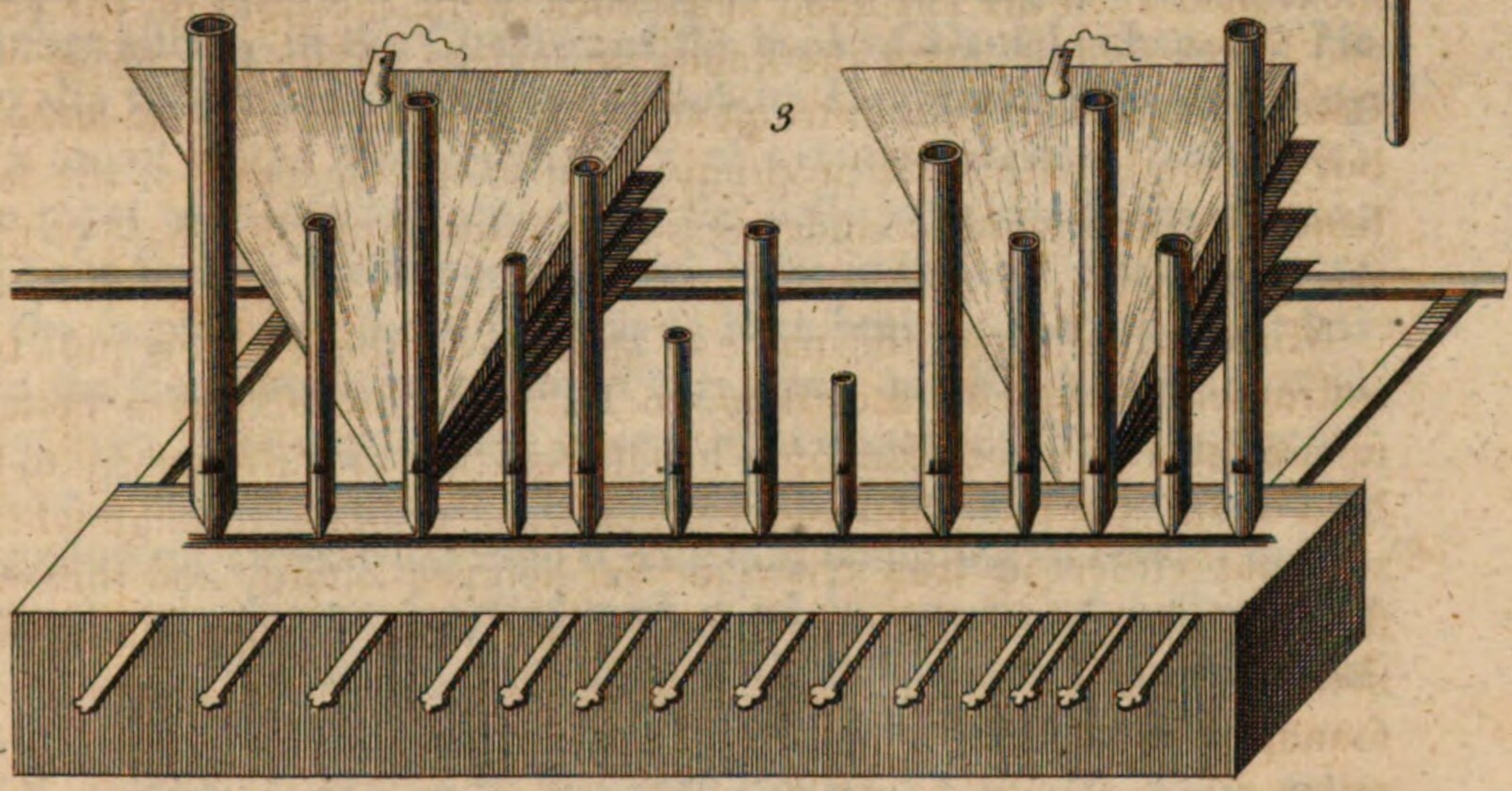

1

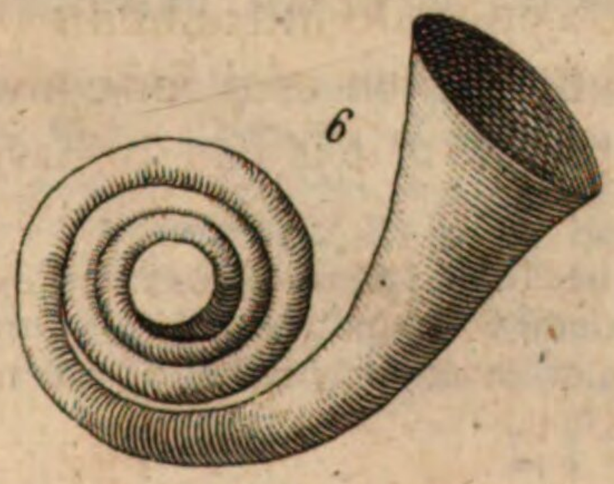

2

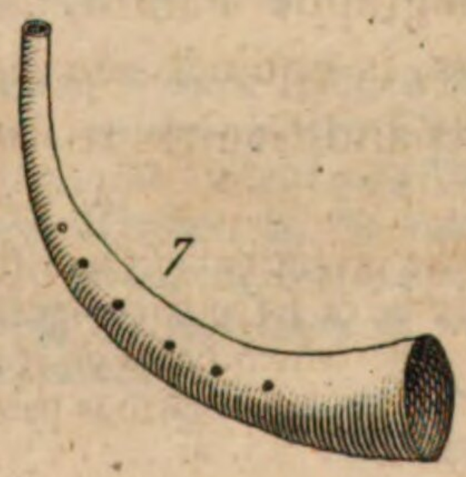
4

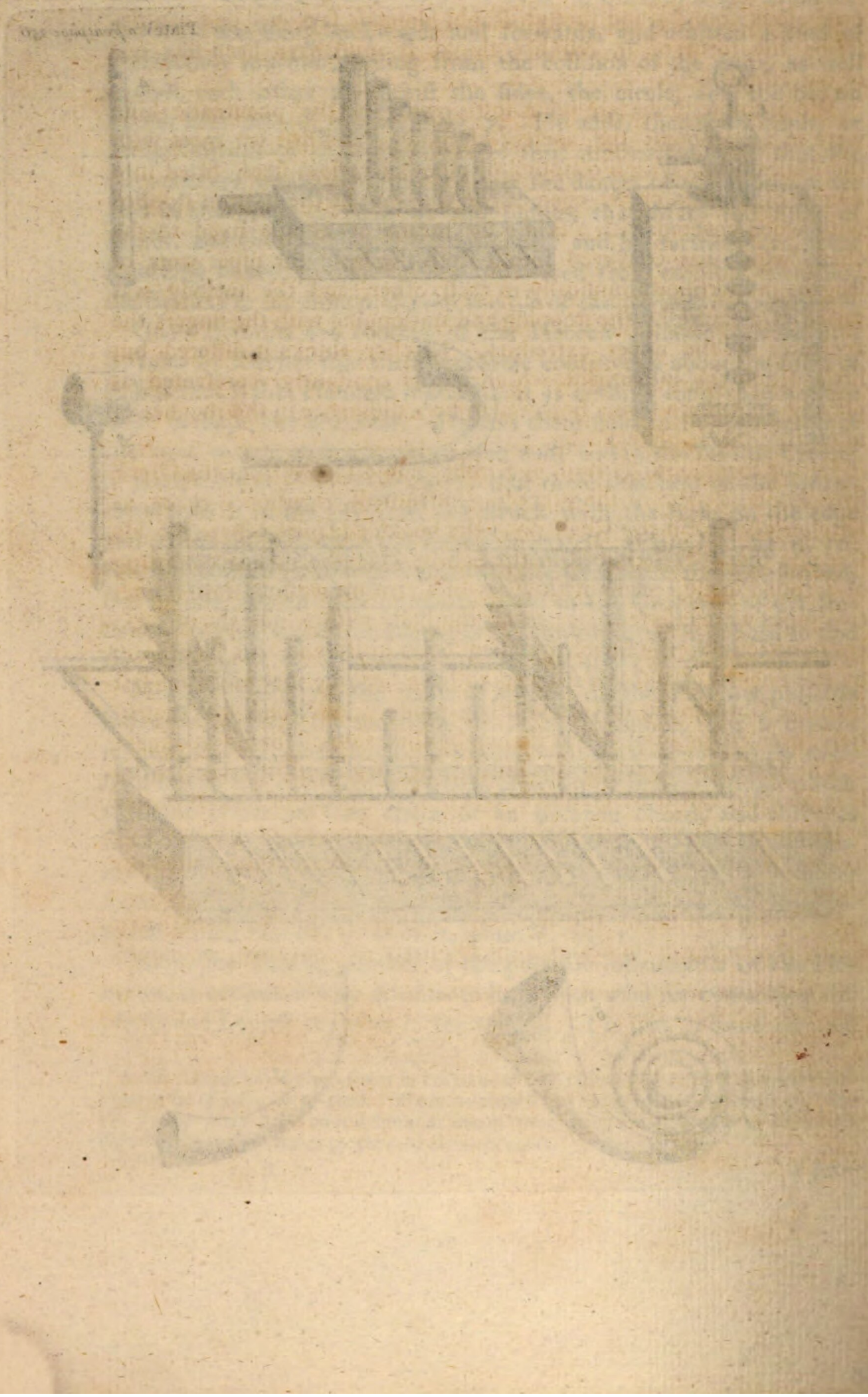
5

8


3


6


7



prodigious ſound; and though Rabbi Hannaſe ſays no one can deſcribe the form of it, Kircher thinks it muſt have been like one of our largeſt bells.

We are now to declare what inſtruments of the pneumatic kind were in uſe amongſt the ancient Hebrews; and firſt we meet with the Maſrakitha, which conſiſted of pipes of various ſizes, fitted into a kind of wooden cheſt, open at the top, but at the bottom ſtopped with wood covered with a ſkin; by means of a pipe fixed to the cheſt, wind was conveyed into it from the lips: the pipes were of lengths proportioned muſically to each other, and the melody was varied at pleaſure by the ſtopping and unſtopping with the fingers the apertures at the upper extremity. Kircher thinks it differed but little from the inſtrument which Pan is conſtantly repreſented as playing on; there ſeems however to be a difference in the manner of uſing it. See it plate V. fig. 2.

Of the Sampunia, derived, as Kircher conjectures, from the Greek Symphonia, as alſo of the preceding inſtrument, mention is made, as Kircher aſſerts, in the Chaldaic of the book of Daniel, chap. iii. He ſays alſo that it is deſcribed in the Schilte Haggiborim, as conſiſting of a round belly, made of the ſkin of a ram or wether, into which two pipes were inſerted, one to fill the belly with wind, the other to emit the ſound; the lower pipe had holes in it, and was played on by the fingers. In ſhort, it ſeems to have been neither more nor leſs than the Cornamuſa, or common bag-pipe; and Kircher ſays that in Italy, even in his days, it was known by the name of the Zampugna.

The Hebrews had alſo an inſtrument, deſcribed in the Schilte Haggiborim, called Macraphe d'Aruchin, conſiſting of ſeveral orders of pipes, which were ſupplied with wind by means of bellows; it had keys, and would at this time without heſitation be called an organ. Plate V. fig. 3*.

Of Fiſtulæ it ſeems the Hebrews had ſundry kinds; they were chiefly the horns or bones of animals, ſtrait or contorted, as nature

* This inſtrument is delineated by Kircher, but the figure of it above referred to, is taken from the Muſica Hiſtorica of Wolfgang Gaſpar Printz, written in the German language, and printed at Dreſden in 4to. anno 1690, who cites the Collectaneis Philologicis of Johannes Schütterus, to juſtify his deviations from Kircher, in the form of ſome of the inſtruments deſcribed in the Muſurgia. But it is to be feared, that his author has erred in giving to the Machul and Minnin above deſcribed, the hair-bow, of which not the leaſt trace is to be found in the writings of any of the ancients.

faſhioned them: the repreſentations of ſundry kinds of them, in figures 4, 5, 6, 7, plate V. are taken from Kircher.

In the account which Blanchinus has given of the Jewiſh muſical inſtruments, he mentions a mallet of wood uſed by them in their worſhip, and which at certain times is beaten by the people on the beams, ſeats, and other parts of the ſynagogue, in commemoration of the tumult preceding the Crucifixion, or, as the modern Jews ſay, at the hanging of Haman, plate V. fig. 8. Inſtruments of this kind, and which produce noiſe rather than ſound, are improperly claſſed among inſtruments of muſic.

Of the Hebrew muſicians no very ſatisfactory account can be given. This of Kircher, extracted from the Rabbinical writers, is, perhaps, the beſt that can be expected ‘ Aſaph, according to the ‘ opinion of the interpreters, was the compoſer of certain pſalms; ‘ he is ſaid alſo to have been a ſinger, and to have ſung to the cym- ‘ bals of braſs, and to have praiſed the Lord, and miniſtred in the ‘ ſight of the ark.

‘ Eman Ezraita, the ſinger, the ſon of Joel, of the children of ‘ Caath, was moſt ſkilful in the cymbal, and was in a manner ‘ equal in knowledge and wiſdom to Ethan; he is the ſuppoſed ‘ author of the Pſalm, beginning Domine Deus ſalutis meæ, which, ‘ becauſe he gave it to be ſung by the ſons of Coreh, he inſcribed ‘ both with his own and their name.

‘ Ethan of Ezrachus, the ſon of Aſſaia, the ſon of Merari, played ‘ on the braſs cymbal, and was endued with ſo much wiſdom, that, ‘ according to the Book of Kings, no mortal, except Solomon, was ‘ wiſer. The three ſons of Coreh, Aſir, Elcana, and Abiaſaph, ‘ were famous ſingers and compoſers of Pſalms.’

‘ Idithus was an excellent ſinger, and player on the cythara. ‘ many confound him with Orpheus.’ Kircher ſuppoſes, that he and the other Hebrew muſicians were inſpired with the knowledge of vocal and inſtrumental muſic, and that their performance was equal to their ſkill. He ſays, he doubts not but that there were many other men, eſpecially in the time of king Solomon, who were well ſkilled in divine muſic, for that the moſt excellent muſic was fitteſt for the wiſeſt of mortals, and that of the Hebrews muſt have been more efficacious in exciting the affections than that of the Greeks, or of later times, but of what kind in particular it was,

and

and by what characters expreſſed, he ſays, its antiquity prevents us from knowing *.

A much later writer than him above cited, and who is now living, Giambatiſta Martini, of Bologna, has entered very deeply into the muſic of the Hebrews; and it were to be wiſhed, that he had been able to give a more ſatisfactory account of it than is to be found in his very learned work, the Storia Muſica, now publiſhing, but of which, as yet [in this year 1771] the public are in poſſeſſion of only one volume. Having few other ſources of intelligence than the Talmud, and the writings of the Rabbins, we are not to expect much information in this particular.

CHAP. II.

FROM accounts ſo vague, and ſo abounding with conjectures as are given of the ancient Hebrew muſic and muſicians, and more eſpecially of their inſtruments, even by writers of the beſt authority, it is very difficult to collect any thing whereon an inquiſitive mind may reſt. With regard to the Hebrew inſtruments, it is evident from the accounts of Kircher, and others, that ſome of them approach ſo nearly to the form of thoſe of more modern times, as to give reaſon to ſuſpect the authenticity of the repreſentation: others appear to have been ſo very inartifi-

* The confuſion of Idithus with Orpheus, ſuggeſts a remark on the endeavours of ſome, to eſtabliſh the identity of eminent perſons of different names and countries, and perhaps of different ages, upon hardly any other ground, than ſome one particular in their hiſtory common to them both: how far it is poſſible to extend an hypotheſis of this kind, the preſent biſhop of Glouceſter has ſhewn in his Divine Legation of Moſes. In the courſe of that work, the author has thought it neceſſary to controvert an aſſertion of Sir Iſaac Newton; namely, that Oſiris and Seſoſtris, both kings of Egypt, were one and the ſame perſon; in order to do this, he, has undertaken to prove, that the Britiſh king Arthur and William the Conqueror were not two diſtinct beings, but indentically one perſon; and, as far as the method of reaſoning uſual in ſuch kind of arguments will ſerve him, he has eſtabliſhed his propoſition.

The concluſion from this correſpondence of ſuch a variety of circumſtances, is much ſtronger in favour of the indentity of Arthur and William, than could have been imagined, and yet, it has no other effect on the mind, than to diſcredit this method of reaſoning, which is fraught with fallacy, and muſt terminate in ſcepticiſm.

What then can we ſay to the opinion of thoſe, who confound the Hebrew muſician Idithus with the ancient Orpheus; what rather can we think of him, who has attempted to ſhew that this latter, and the royal prophet David, were one and the ſame perſon. See the Life of David, by Dr. Delany.

cially conſtructed, that we ſcarce credit the relation, given of their effects. It is clear, that Kircher and Schütterus had from the Rabbinical writers little more than the bare names of many of the inſtruments deſcribed by them; yet, have they both, in ſome inſtances, ventured to repreſent them by forms of a comparatively late invention. Who does not ſee, that the Minnin, as repreſented by the former, and the lute, are one and the ſame inſtrument? and what difference can be diſcerned between the Machul and the Spaniſh Guitar? or can we believe, that the Macraphe d' Aruchin, and ſuch rude eſſays towards melody as the Gnets Beruſim, the Siſtrum, or the Minagnghinim, could ſubſiſt among the ſame people, in any given period of civilization?

As to Martini's account, it ſpeaks for itſelf; it is extracted from the ſacred writings, which, at this diſtance of time, even with the aſſiſtance of the moſt learned comments, fall ſhort of affording that ſatisfaction, which is to be wiſhed for in an enquiry of this kind.

Under theſe diſadvantages, which even an enquiry into the inſtruments of the Hebrews lies under, an attempt to explain their muſical theory muſt ſeem hopeleſs. Nor is it poſſible to conceive any thing like a ſyſtem, to which ſuch inſtruments as the Thoph, or the Gnets Beruſim could be adapted: if the ſtrokes of a peſtle againſt a mortar, like thoſe of the latter, be reducible to meaſure; yet, ſurely the rattling of a chain, like the muſic of the Minagnghinim, is not; or what if they were, would the ſounds produced in either caſe make muſic? To ſpeak freely on this matter, whatever advantages this people might derive from the inſtructions of an inſpired lawgiver, and the occaſional interpoſitions of the Almighty, it no where appears that their attainments in literature were very great: or that they excelled in any of thoſe arts that attend the refinement of human manners; the figure they made among the neighbouring nations appears to have been very inconſiderable; and with reſpect to their muſic, there is but too much reaſon to ſuppoſe it was very barbarous. The only hiſtorical relation that ſeems to ſtand in the way of this opinion, is, that the effects wrought by the muſic of David, on the mind of Saul, a man of a haughty iraſcible temper, not eaſily ſuſceptible of the emotions of pity or complacency, and, at the time when David exerciſed his art on him, under the power of a demon, or, at beſt, in a frenzy.

Kircher has taken upon him to relate the whole proceſs of the diſpoſſeſſion of Saul, by David, and has done it as circumſtantially as if he had been preſent at the time; his reaſoning is very curious, and it is here given in his own words.

'That we may be the better able to reſolve this queſtion, how 'David freed Saul from the evil ſpirit, I ſhall firſt quote the words 'of the Holy Scripture, as found in the firſt book of Samuel, 'chap. xvi. ver. 23.' "And it came to paſs when the evil ſpirit from "God was upon Saul, that David took an harp, and played with his "hand: ſo Saul was refreſhed, and was well, and the evil ſpirit "departed from him." 'The paſſage in the holy text informs 'us very clearly, that the evil ſpirit, whatſoever it was, was driven 'away by muſic; but how that came to paſs is differently ex-'plained. The Rabbins on this place ſay, that when David cured 'Saul, he played on a cythara of ten ſtrings; they ſay alſo, that 'David knew that ſtar, by which it was neceſſary the muſic ſhould 'be regulated, in order to effect the cure: thus Rabbi Abenezra. 'But Picus of Mirandola ſays, that muſic ſets the ſpirits in motion, 'and thereby produces the like effects on the mind, as a medicine 'does on the body; from whence it may ſeem, that the comment 'of Abenezra, is vain and trifling, and that David regarded not the 'aſpects of the ſtars; but truſting to the power of his inſtrument, 'ſtruck it with his hand as his fancy ſuggeſted.

'And we, rejecting ſuch aſtrological fictions, aſſert, that David 'freed Saul, not with herbs, potions, or other medicaments, as 'ſome maintain, but by the ſole force and efficacy of muſic. In 'order to demonſtrate which, let it be obſerved, that thoſe appli-'cations which unlock the pores, remove obſtructions, diſpel va-'pours and chear the heart, are beſt calculated to cure madneſs, 'and allay the fury of the mind; now muſic produces theſe effects, 'for as it conſiſts in ſounds, generated by the motion of the air, it 'follows that it will attenuate the ſpirits, which by that motion 'are rendered warmer, and more quick in their action, and ſo diſſi-'pate at length the melancholy humour. On the contrary, where it 'is neceſſary to relax the ſpirits, and prevent the wounding or af-'fecting the membranes of the brain; in that caſe, it is proper to 'uſe ſlow progreſſions of ſound, that thoſe ſpirits and biting vapours, 'which aſcend thither from the ſtomach, ſpleen, and hypocondria,

'may

'may be quietly diſmiſſed. Therefore, the muſic of David might appeaſe Saul, in either of theſe two ways of attenuation or diſmiſſion: by the one, he might have expelled the melancholy from the cells of the brain, or he might by the other have diſſolved it, and ſent it off in thin vapours, by inſenſible perſpiration. In either caſe, when the melancholy had left him, he could not be mad until the return of it, he being terreſtrial, and as it were, deſtitute of action, unleſs moved thereto by the vital ſpirits, which had led him here and there; but they had left him, when for the ſake of the harmony they had flown to the ears, abandoning, as I may ſay, their rule over him. And though, upon the ceſſation of the harmony they might return, yet, the patient having been elevated, and rendered chearful, the melancholy might have acquired a more favourable habit. From all which, it is manifeſt, that this effect proceeded not from any caſual ſound of the cythara, but from the great art and excellent ſkill of David in playing on it; for, as he had a conſummate and penetrating judgment, and was always in the preſence of Saul, as being his armour-bearer, he muſt have been perfectly acquainted with the inclination and bent of his mind, and to what paſſions it was moſt ſubject: hence, without doubt, he being enabled, not ſo much by his own ſkill, as impelled by a divine inſtinct, knew ſo dexterouſly, and with ſounds ſuited to the humour and diſtemper of the king, to touch the cythara, or indeed any other inſtrument; for, as has been mentioned, he was ſkilled in the uſe of no fewer than thirty-ſix, of different kinds. It might be, that at the inſtant we are ſpeaking of, he recited ſome certain rhythmi, proper for his purpoſe, and which Saul might delight to hear; or, that by the power of metrical dancing, joined to the melody of the inſtrument, he wrought this effect: for Saul was apt to be affected in this manner, by the muſic and dancing of his armour-bearer; as he was a youth of a very beautiful aſpect, theſe rouſed up the ſpirits, and the words, which were rhythmically joined to the harmony, tickling the hearing, lifted up the mind, as from a dark priſon, into the high region of light, whereby the gloomy ſpirits which oppreſſed the heart were diſſipated, and room was left for it to dilate itſelf, which dilatation was naturally followed by tranquility and gladneſs.' Muſurgia, tom. II. pag. 214, et ſeq.

Whoever

Whoever will be at the pains of turning to the original from whence this very circumſtantial relation is taken, will think it hardly poſſible for any one to compreſs more nonſenſe into an equal number of words than this paſſage contains, for which no better apology can be made than that Kircher, though a man of great learning, boundleſs curioſity, and indefatigable induſtry, was leſs happy in forming concluſions than in relating facts; his talents were calculated for the attainment of knowledge, but they did not qualify him for diſquiſition; in ſhort he was no reaſoner. With regard to the diſpoſſeſſion of Saul, ſuppoſing muſic to have been in any great degree of perfection among the Hebrews in his time, there is nothing incredible in it; and beſides it has the evidence of ſacred hiſtory to ſupport it: it would therefore have argued more wiſdom in the jeſuit to have admitted the fact, without pretending to account for it, than by ſo ridiculous a theory as he has endeavoured to eſtabliſh, to render the narration itſelf doubtful.

After this cenſure above paſſed on the muſic of the Hebrews, it would argue an unreaſonable prejudice againſt them, were it not admitted that their poetry carries with it the ſignatures of a moſt exalted ſublimity: to ſelect inſtances from the prophets might be deemed unfair, as there are good reaſons to believe that ſomething more than mere human genius dictated thoſe very energetic compoſitions; but if we look into thoſe of their writings which the canon of our church has not adopted, we ſhall find great reaſon to admire their poetical abilities. It is true that the boldneſs of their figures, and thoſe abrupt tranſitions, which diſtinguiſh the oriental compoſitions from thoſe of moſt other countries, are not ſo well reliſhed by a people with whom the falſe refinements on life and manners have taken place of the original ſimplicity of nature; but in the more regular and leſs enthuſiaſtic ſpirit of expreſſion, we feel and admire their excellence. Not to mention the numberleſs inſtances of this ſort that occur in the Pſalms, there is one poem among them, which for its truly elegiac ſimplicity, pathetic expreſſion of the woes of captivity, and the lamentations for the ſufferings of an afflicted people, has perhaps not its fellow in any of the dead or living languages. The poem here meant is the CXXXVIIth Pſalm.

From the manner in which it appears the ancients treated muſic, we may obſerve that they reaſoned very abſtractedly about it; the meaſure

meaſure of intervals, either by their ratios, or by their ear, was in their judgment a very important branch of the ſcience, and we are not to wonder at that cloſe connexion, which in the writings of the Pythagoreans at leaſt, is diſcoverable between the three ſciences muſic, arithmetic, and geometry. In this view it may perhaps be ſaid that the ſtudy of muſic had an influence on the minds and tempers of men, as we ſay that the ſtudy of the mathematics has a tendency to induce a habit of thinking, to invigorate the powers of the underſtanding, and to detect the fallacy of ſpecious and deluſive reaſoning, but in what other way it could affect the manners, or indeed the mind, unleſs in that very obvious one of an addreſs to the paſſions, which we at this day are all ſenſible of, is utterly impoſſible to determine.

And indeed the inveſtigation of proportions and the properties of numbers may be ſaid to be very different from the art of combining ſounds, ſo as to excite that pleaſure which we aſcribe to muſic; and perhaps it may not be too much to ſay that the underſtanding has little to do with it, nay, ſome have carried this matter ſo far as to queſtion whether the delight we receive from muſic does not partake more of the ſenſual than the intellectual kind *; however this at leaſt may be ſaid, that it is ſome faculty, very different from the underſtanding, that enables us to perceive the effects of harmony, and to diſtinguiſh between conſonant and diſſonant ſounds, and in this reſpect, the affinity between muſic, and that other art, which for more reaſons than all are aware of, has ever been deemed its ſiſter, is very remarkable. That painting has its foundation in mathematical principles, is certain, nay, that there is a harmony between colours, analogous to that of ſounds, is demonſtrable; now the laws of optics, the doctrine of light and colours, and the principles of perſpective, connected as they are with geometry, all of which painting has more or leſs to do with, are things ſo different from the repreſentation of corporeal objects, from the ſelection and artful arrangement of beautiful forms, from the expreſſions of character and paſſion as they appear in the human countenance, and, laſtly, from that creative faculty in which we ſuppoſe the perfection of painting to conſiſt, that we ſcruple not to ſay that a man may be an excellent painter with a ſlen-

* This metaphyſical queſtion is diſcuſſed and determined in the negative, i. e. that muſic is an intellectual pleaſure, by the ingenious Mr. John Norris of Bemerton. See his Miſcellanies, pag. 309, 12mo.

der

der knowledge of the mathematics; and the examples of the moſt eminent profeſſors of the art, are a proof the aſſertion.

But the reaſon why the ancient writers treated the ſubject in this manner is, that they uſed the word Harmony to expreſs relation and coincidence in general; nay, ſo extenſively was this appellation uſed, that many authors of treatiſes on this ſubject have thought it previouſly neceſſary to a diſcuſſion of muſic in its three moſt obvious diviſions of rythmic, metric, and harmonic, to treat of mundane, humane, and political muſic; the three laſt of which ſpecies, if at all intitled to the name of muſic *, muſt owe it to a metaphor, and that a very bold one: Ariſtides Quintilianus uſes another method of diviſion, which it muſt be confeſſed is the more natural of the two, and ſays that muſic is of two kinds, the contemplative and the active; the firſt of theſe he ſubdivides into natural and artificial; which latter he again divides into the harmonic, the rhythmic, and the metric; the the active he divides into the uſual and the enunciative; the uſual,

* Ariſtoxenus's diviſion is rhythmic, metric, organic, lib. II. That of Boetius, mundane, humane, and inſtrumental. By the firſt is to be underſtood the harmony of the ſpheres, before ſpoken of; by the ſecond, the harmony ſubſiſting between the body and the rational ſoul as united together, each being actuated by the other; and alſo that other kind of harmony, conſent, relation, or whatever elſe it may be called, between the parts of the body, with reſpect to each; and again between thoſe affections of the human mind, which, oppoſed to, or counterbalancing each other, and aided by reaſon, produce a kind of moral harmony, the effects whereof are viſible in an orderly and well-regulated conduct.

To theſe Kircher and others have added muſica politica, which, ſay they, conſiſts in that harmonical proportion, which in every well-regulated government ſubſiſts between the three ſeveral orders of the people, the high, the low, and the middle ſtate.

Kircher, whoſe inventive faculty never fails him, has given ſcales demonſtrating each of theſe ſuppoſed kinds of harmony; but whoever would be farther informed as to the nature of mundane muſic, as it is above called, or is deſirous of knowing to what extravagant lengths the human imagination may be led, may conſult the writings of our countryman Dr. Robert Fludd, or de Fluctibus, a phyſician, and a Roſicruſian philoſopher; and who, though highly eſteemed for his learning by Selden, was perhaps one of the greateſt myſtics that ever lived. In a work of his intitled, Utriuſque Coſmi majores ſcilicet et minoris metaphyſica, phyſica, atque technica Hiſtoria, printed at Oppenheim 1617, folio, is one book intitled De Muſica mundana, wherein the author exhibits the form of what he calls Monochordum mundanum, an inſtrument repreſenting a monochord, with the ſtring ſcrewed up by a hand that iſſues from the clouds. Fludd ſuppoſes the ſound of the chord, when open, to anſwer to terra or the earth, and to correſpond with the note gamut in the ſcale of muſic: from thence he aſcends by tones and ſemitones, in regular order, to water, and the other elements, through the planets, and ſo to the empyræan, anſwering to g g in the ratio of the diſdiapaſon.

Merſennus has thought this diagram worthy of a place in his Latin work; and, to ſay the truth, moſt of the plates in this and other of Fludd's works, and by the way they abound with them, are to the laſt degree curious and diverting. There will be farther occaſion to ſpeak of this extraordinary man, Fludd, in the courſe of this work.

containing melopœia, rhythmopœia, and poeſia; and the enunciative the organic, the odiac, the hypocritic *.

Thus we ſee that the ancients, when they treated of muſic, uſed the word Harmony in a ſenſe very different from that in which it is underſtood at this day; for there is doubtleſs a harmony between ſounds emitted in ſucceſſion, which is diſcernible as long as the impreſſion of thoſe already ſtruck remains uneffaced; yet we chooſe to diſtinguiſh this kind of relation by the word Melody, and that of Harmony is appropriated to the coincidence of different ſounds produced at the ſame inſtant: if it be aſked why the ancients uſed the word Harmony in a ſenſe ſo very reſtrained, as is above repreſented, the anſwer is eaſy, if that poſition be true which many writers have advanced, namely, that their muſic was ſolitary, and that they were utter ſtrangers to ſymphoniac harmony. This the admirers of antiquity will by no means allow; and, to ſay the truth, there are very few queſtions which have more divided the learned world than this. In order that the reader may be able to form a judgment on a matter of ſo great curioſity, the authorities on both ſides ſhall now be produced, and ſubmitted to his conſideration.

To avoid confuſion, it will be neceſſary firſt to reduce the propoſition to the form of a queſtion, which, to take it in the ſenſe in which it has generally been diſcuſſed, ſeems to be, Whether the ancients had the knowledge of muſic in ſymphony or conſonance, or not?

The advocates for the affirmative are Franchinus, or, as he is frequently named, Gaffurius, Zarlino, Gio. Battiſta Doni, Iſaac Voſſius, and Zaccaria Tevo, all, excepting Voſſius, muſicians, and he confeſſedly a man of learning, but a great bigot, and of little judgment: the ſum of their arguments is, that it appears by the writings of the ancients that their ſkill in harmony was very profound, and that they reaſoned upon it with all the accuracy and preciſion which became philoſophers; that the very firſt diſcoveries of the nature of muſical conſonance, namely, thoſe made by Pythagoras, tended much more naturally to eſtabliſh a theory of harmony than of mere melody or harmony in ſucceſſion, that ſuppoſing Pythagoras never to have lived, it could not have happened, but that the innumerable coincidences of ſounds produced by the voice or by the

* See the Analyſis of Quintilian, in chap. iii. of the next preceding book.

per-

percuſſion of different bodies at the ſame inſtant, which muſt neceſſarily occur in the courſe of a very few years, could not fail to ſuggeſt a trial of the effects of concordant ſounds uttered together, or at one and the ſame point of time; that thoſe paſſages of ſacred writ that mention commemoration of remarkable events, or the celebration of public feſtivals, as that of the dedication of Solomon's temple, with a great number of voices and inſtruments, hardly allow of the ſuppoſition that the muſic upon theſe occaſions was uniſonous.

All this it may be ſaid is mere conjecture, let us therefore ſee what farther evidence there is to countenance the belief that the ancients were acquainted with the uſe of different parts in muſic; Ariſtotle in his treatiſe concerning the world, lib. V. has this queſtion, 'If the 'world is made of contrary principles, how comes it that it was not 'long ago diſſolved?' In anſwer to this he ſhews that its beauty, perfection, and duration are owing to the admirable mixture and temperament of its parts, and the general order and harmony of nature. In his illuſtration of this argument he introduces muſic, concerning which he has this paſſage: Μουσικὴ δὲ ὀξεῖς ἅμα καὶ βαρεῖς, μακρους τε καὶ βραχεῖς φθόγγους μίξασα, ἐν διαφόραις φωναῖς, μίαν ἀπετέλεσεν ἁρμονίαν. 'Muſic, 'by a mixture of acute and grave, and of long and ſhort ſounds of 'different voices, yields an abſolute or perfect concentus or concert.'— Again, lib. VI. explaining the harmony of the celeſtial motions, he ſays, that 'though each orb has a motion proper to itſelf, yet is it 'ſuch a motion as tends to one general end, proceeding from a prin-'ciple common to all the orbs, which produce, by the concord ariſing 'from their motions, a choir in the heavens:' and he purſues the compariſon in theſe words: Καθάπερ δὲ ἐν χορῷ κορυφαίοις καταρξάντες, συνεπηχεῖ πᾶς ὁ χορὸς ἀνδρῶν ἅθ' ὅτε καὶ γυναικων ἐν διαφόραις φωναις ὀξυτέραις καὶ βαρυτέραις μιαν ἁρμονίαν ἐμμελῆ κεραννύντων.

Seneca, in his Epiſtles, has this paſſage. 'Do you not ſee of how 'many voices the chorus conſiſts, yet they make but one ſound? In 'it ſome are acute, others grave, and others in a mean between both; 'women are joined with men, and pipes are alſo interpoſed among 'them, yet is each ſingle voice concealed, and it is the whole that is 'manifeſt *.'

* Non vides quam multorum vocibus chorus conſtet? unus tamen ex omnibus ſonus 'redditur. Aliqua illic acuta eſt, aliqua gravis, aliqua media. Accedunt viris feminæ, 'interponuntur tibiæ, ſingulorum latent voces, omnium apparent'. Seneca Epiſt. 84.

Caſſiodorous has the following paſſage, which may ſeem ſomewhat ſtronger: 'Symphony is the adjuſtment of a grave ſound to an acute, 'or an acute to a grave ſound, making a melody.'

From the ſeveral paſſages above-cited it appears, that the ancients were acquainted with ſymphonetic muſic of a certain kind, and that they employed therein voices differing in degrees of acuteneſs and gravity; and thus far the affirmative of the queſtion in debate may ſeem to be proved.

But in ſupport of the negative we have the authorities of Glareanus, Salinas, Bottrigari, Artuſi, Cerone, Kircher, Meibomius, Kepler, Bontempi, our countrymen Morley, Wallis, and others, a numerous band, who infer an abſolute ignorance among the ancients of harmony produced by different and concordant ſounds, affecting the ſenſe at the ſame inſtant, from the general ſilence of their writers about it, for the exceeding ſkill and accuracy with which they diſcuſſed the other parts of muſic, leave no room to imagine but that they would have treated this in the ſame manner had they been acquainted with it: what diſcoveries accident might produce in that long ſeries of years prior to the time of Pythagoras no one can ſay; hiſtory mentions none, nor does it pretend that even he made any uſe of his diſcovery, other than to calculate the ratios of ſounds, regulate the ſyſtem, and improve the melody of his time.

That voices and inſtruments, to a very great number, were employed at public ſolemnities is not denied, but it is by no means a conſequence that therefore the muſic produced by them conſiſted of different parts; at this day among the reformed churches ſinging by a thouſand different voices of men, women, and children, in divine worſhip is no very unuſual thing; and yet the reſult of all this variety of ſound is hardly ever any thing more than mere melody, and that of the ſimpleſt and moſt artleſs kind. Thus much in anſwer to the arguments founded on the improbability that the ancients could be ignorant of ſymphonetic harmony, in the ſenſe wherein at this day the term is underſtood.

With reſpect to the ſeveral paſſages above-cited, they ſeem each to admit of an anſwer; to the firſt, produced from Ariſtotle, it is ſaid that the word Symphony, by which we ſhould underſtand the harmony of different ſounds uttered at one given inſtant, is uſed by him to expreſs two different kinds of conſonance, ſymphony and antiphony; the

firſt,

firſt, according to him, is the conſonance of the uniſon, the other of the octave. In his Problems, § xix. prob. 16. he aſks why ſymphony is not as agreeable as antiphony? the anſwer is, becauſe in ſymphony the one voice being altogether like the other, they eclipſe each other; the ſymphony can therefore in this place ſignify nothing but uniſonous or integral harmony: and he elſewhere explains it to be ſo, by calling that ſpecies of conſonance, Omophony; as to Antiphony, it is clear that he means by it the harmony of an octave, for he conſtantly uſes the word in that ſenſe; and leſt there ſhould any doubt remain about it, he ſays that it is the conſonance between ſounds produced by the different voices of a boy and a man, that are as Nete and Hypate; and that thoſe ſounds form a preciſe octave is evident from all the repreſentations of the ancient ſyſtem that have ever been given. The ſum of Ariſtotle's teſtimony is, that in his time there was a commixture of ſounds, which produced a concinnous harmony: no doubt there was, but what is meant by that concinnous harmony his own words ſufficiently explain.

As to Seneca, it muſt be confeſſed that the vox media muſt imply two extremes; but what if in the chorus which he ſpeaks of, the ſhrill tibiæ were a biſdiapaſon above the voices of the men, and that the women ſung, as they ever do, an octave above them, would not theſe different ſounds produce harmony? Certainly they would; but of what kind? Why the very kind deſcribed by him, ſuch as ſeems to make but one ſound, which can be ſaid of no harmony but that of the uniſon or octave.

Laſtly, as to Caſſiodorus, his words are 'Symphonia eſt temperamentum ſonitus gravis ad acutum vel acuti ad gravem, modulamen efficiens, ſive in voce, ſive in percuſſione, ſive in flatu *:' as to the word Temperamentum, it can mean only an adjuſtment; and Modulamen was never yet applied to ſounds but as they followed each other in ſucceſſion: to modulate is to paſs, to proceed from one key or ſeries to another; the very idea of modulation is motion: the amount then of this definition is, that the attemperament or adjuſtment of a grave to an acute ſound, or of an acute to a grave one, conſtitutes ſuch a kind of ſymphony as nothing will anſwer to but melody; which is above ſhewn to be not inſtantaneous, but ſucceſſive ſymphony or conſonance.

* M. Aur. Caſſiodor. Opera. De Muſica.

There

There is yet another argument to the purpoſe. The ancients did not reckon the third and ſixth among the conſonances; this is taken notice of by a very celebrated Italian writer Giov. Maria Artuſi of Bologna, who, though he has written expreſsly on the imperfections of modern muſic, ſcruples not therefore, and becauſe the third and ſixth are the beauty of ſymphonic muſic, to pronounce that the ancients muſt have been unacquainted with the harmony of muſic in parts, in the ſenſe in which the term is now underſtood *: and an author whom we ſhall preſently have occaſion to cite more at large, ſays expreſsly that they acknowledged no other conſonances than the diapaſon, diapente, and diateſſaron, and ſuch as were compoſed of them †; nor does it any where appear that they were in the leaſt acquainted with the uſe of diſcords, or with the pleaſing effects produced by the preparation and reſolution of the diſſonances; and if none of theſe were admitted into the ancient ſyſtem, let any one judge of its fitneſs for compoſition in different parts.

In Morley's Introduction is a paſſage from whence his opinion on this queſtion may be collected; and, as he was one of the moſt learned muſicians that this nation ever produced, ſome deference is due to it; ſpeaking of Deſcant ‡, he uſes theſe words: 'When deſcant did begin, 'by whom, and where it was inuented, is vncertaine; for it is a great 'controuerſie amongſt the learned if it were knowne to the antiquitie, 'or no; and diuers do bring arguments to proue, and others to diſ-'proue the antiquitie of it; and for diſprouing of it, they ſay that in all 'the workes of them who haue written of muſicke before Franchinus, 'there is no mention of any more parts then one; and that if any did 'ſing to the harpe (which was their moſt vſuall inſtrument) they ſung 'the ſame which they plaied. But thoſe who would affirme that the 'ancients knew it, ſaie, That if they did not know it, to what ende 'ſerued all thoſe long and tedious diſcourſes and diſputations of the 'conſonantes, wherein the moſte part of their workes are conſumed; 'but whether they knew it or not, this I will ſay, that they had it 'not in halfe that variety wherein we now haue it, though we read 'of much more ſtrange effects of their muſicke then of ours.' Annotations on Morley's Introduction, part II.

* Artuſi delle Imperfettioni della Moderna Muſica. Ragionam. primo, Cart. 14.

† Muſurg. tom. I. pag. 540.

‡ Deſcant, as uſed by this author, has two ſignifications; the one anſwers preciſely to muſic in conſonance, the other will be explained hereafter.

CHAP.

CHAP. III.

THE ſuffrage of Kircher, in a queſtion of this nature, will be thought to carry ſome weight: this author, whoſe learning and ſkill in the ſcienc are univerſally acknowledged, poſſeſſed every advantage that could lead to ſatisfaction in a queſtion of this nature, as namely, a profound ſkill in languages, an extenſive correſpondence, and an inquiſitive diſpoſition; and for the purpoſe had been indulged with the liberty of acceſs to the moſt celebrated repoſitories of literature, and the uſe of the moſt valuable manuſcripts there to be met with; and who, to ſum up all, was at once a philoſopher, an antiquary, an hiſtorian, a ſcholar, and a muſician, has given his opinion very much at large in nearly the following words.

'It has for ſome time been a queſtion among muſicians whether 'the ancients made uſe of ſeveral parts in their harmony or not: in 'order to determine which, we are to conſider their polyodia as 'threefold, natural, artificial, and uniſonous; I call that natural 'which is not regulated by any certain rules or precepts, but is per-'formed by an extemporary and arbitrary ſymphony of many voices, 'intermixing acute and grave ſounds together; ſuch as we obſerve 'even at this time, happens amongſt a company of ſailors or reapers, 'and ſuch people, who no ſooner hear any certain melody begun 'by any one of them, than ſome other immediately invent a baſs or 'tenor, and thus is produced an harmony extemporary, and not 'confined by any certain laws, and which is very rude and imper-'fect, as it is almoſt always uniſon, containing nothing of harmony, 'except in the cloſes, and therefore of no worth: that the Greeks 'had ſuch a kind of muſic none can doubt. But the queſtion is not 'concerning this kind of polyodia, but whether they had compoſitions 'for ſeveral voices, framed according to the rules of art. I have 'taken great pains to be ſatisfied in this matter; and as in none of 'the Greek and Latin writers I have met with, any mention is made 'of this kind of muſic, it ſeems to me that either they were ignorant 'of it, or that they did not make uſe of it, as imagining perhaps that

'it

'it interrupted the melody, and took away from the energy of the 'words; as to the term Harmonici concentus, it is only to be under-'derſtood of the agreement between the voice and the ſound of the 'inſtrument.

'Thoſe who attempt to prove from Euclid that the ancients did 'compoſe muſic in really different parts, do not ſeem to underſtand 'his meaning; for when he mentions the four parts of a ſong, ἀγωγὴ, 'τονὴ, πετϛεία, πλοκὴ, he does not thereby mean the four polyodical 'parts of cantus, altus, tenor, and baſs, but ſo many different affec-'tions of the voice, certain harmonical figures or tropes, whereby 'the ſong acquired a particular beauty and grace; for what elſe can 'the word Ἀγοϛὴ mean than a certain tranſition of the voice from 'ſome given ſound to another that is related to it. Τονὴ ſignifies a 'certain ſtay or dwelling on a ſound; Πλοκὴ, or implication, is a 'particular ſpecies or colour of the Ἀγογὴ, as Πετϛεία, friſking or play-'ing on, is of Τονὴ: what the Ἀγογὴ is to Τονὴ, ſuch is the Πλοκὴ 'to the Πετϛεία.

'Some imagine that the ancients had a polyodical inſtrumental 'muſic from the diverſity of their pipes; and are of opinion that at 'leaſt an organical or inſtrumental harmony or ſymphony, regulated 'by art, was in uſe among the ancients, becauſe their authors make 'mention of certain pipes, ſome of which were termed Παρθενιοι, or 'fit for girls; ſome Παιδικοι, or fit for boys; ſome Τελιοι, as being in a 'mean between the acute and grave ſounds; and others Ὑπερϛελιοι, as 'agreeing with the grave. The better to clear up this doubt, we 'muſt conſider the organical polyodia as twofold, natural and arti-'ficial; and both theſe I make no doubt were in uſe as well as 'the vocal polyodia; for it is very probable that ſuch as played on 'thoſe pipes, becoming ſkilful by ſuch practice, invented certain 'ſymphonies adapted to their purpoſe, and which they played on 'their public feſtivals, diſtributing themſelves into certain choruſſes. 'Symphonies of this ſort are at this time to be heard among the coun-'try people, who, though ignorant of the muſical art, exhibit a 'ſymphony, ſuch a one as it is, on their flutes and pipes of different 'ſizes, and this merely through the judgment of their ear; and it is 'alſo probable that the ancient Hebrews by this means alone became 'enabled to celebrate the praiſes of God on ſo many Cornua, Fiſtulæ,

‘ Litui, Tubæ, Buccinæ, as they are ſaid to have been uſed at once
‘ in their temple; and I remember to have heard the Mahometan
‘ ſlaves in the iſland of Malta exhibit ſymphonies of this kind. An
‘ affection therefore of the polyodia is implanted in the nature of
‘ man; and I doubt not but that the ancients knew and practiſed it
‘ in the manner above related: but though I have taken great pains
‘ in my reſearches, I could never find the leaſt ſign of their having
‘ any artificial organical Melotheſia of many parts; which, had they
‘ been acquainted with it, they would doubtleſs have mentioned, it
‘ being ſo remarkable a thing. What Boetius, Ptolemy, and others
‘ ſpeak concerning harmony, is to be underſtood only as to a ſingle
‘ voice, to which an inſtrument was joined; add to this that the
‘ ancients acknowledged no other concords than the diapaſon, the
‘ diapente, and the diateſſaron, and ſuch as were compoſed of them;
‘ for they did not reckon as now, the ditone, ſemiditone, and hexa-
‘ chord among the conſonances. It therefore follows that the an-
‘ cient Greeks acknowledged nothing more than the Monodia,
‘ adapted, it muſt be confeſſed, with much care and the greateſt art
‘ to the ſound of the lyre or the tibia; ſo that nothing was deficient
‘ either in the variety of the modulation, the ſweetneſs of the ſinging,
‘ the juſtneſs of the pronunciation, or the gracefulneſs of the body in
‘ all its geſtures and motions: and I imagine that the lyre of many
‘ ſtrings was ſounded in a harmonical concentus to the voice, in
‘ no other manner than is uſed in our days *.’

Dr. Wallis has given his opinion on this important queſtion in terms that ſeem deciſive; for ſpeaking of the muſic of the ancients he makes uſe of theſe words:

‘ We are to conſider that their muſic, even after it came to ſome
‘ good degree of perfection, was much more plain and ſimple than ours
‘ now-a-days. They had not concerts of two, three, four, or more
‘ parts or voices, but one ſingle voice, or ſingle inſtrument a-part,
‘ which to a rude ear is much more taking than more compounded
‘ muſic; for that is at a pitch not above their capacity, whereas this
‘ other confounds it with a great noiſe, but nothing diſtinguiſhable
‘ to their capacity †.’ And again in the ſame paper he ſays: ‘ I do not

* Muſurg. tom. I. pag. 537, et ſeq.
† Abridgment of Philoſoph. Tranſactions by Lowthorp and Jones, vol. I. pag. 618.

'find among the ancients any footſteps of what we call ſeveral parts 'or voices, (as baſs, treble, mean, &c. ſung in concert) anſwering 'to each other to complete the muſic.' And in the Appendix to his edition of Ptolemy, pag. 317, he expreſſes himſelf on the ſame ſubject to this purpoſe: 'But that agreement which we find in the 'modern muſic, of parts (as they term it) or of two, three, four, or 'more voices (ſinging together ſounds which are heard all together) 'was intirely unknown to the ancients, as far as I can ſee.'

From the ſeveral paſſages above-cited, it appears that the queſtion, whether the ancients were acquainted with muſic in conſonance or not, has been frequently, and not unſucceſsfully agitated, and that the arguments for the negative ſeem to preponderate, Nevertheleſs the author of a book lately publiſhed, entitled, 'Principles and Power 'of Harmony,' after taking notice that Dr. Wallis, and ſome others, maintained that the ancients were ſtrangers to ſymphoniac muſic, has, upon the ſtrength of a ſingle paſſage in Plato, been hardy enough to aſſert the contrary: his words are theſe.

'The ſtrongeſt paſſage which I have met with in relation to this 'long-diſputed point, is in Plato; a paſſage which I have never ſeen 'quoted, and which I ſhall tranſlate: "Young men ſhould be "taught to ſing to the lyre, on account of the clearneſs and preciſion "of the ſounds, ſo that they may learn to render tone for tone. "But to make uſe of different ſimultaneous notes, and all the variety "belonging to the lyre, this ſounding one kind of melody, and the "poet another—to mix a few notes with many, ſwift with ſlow, "grave with acute, conſonant with diſſonant, &c. muſt not be "thought of, as the time allotted for this part of education is too "ſhort for ſuch a work." Plat. 895. I am ſenſible that objections 'may be made to ſome parts of this tranſlation, as of the words 'πυκνοῖς, μανοῖς, and ἀνιφωνοις, but I have not deſignedly diſguiſed 'what I took to be the true ſenſe of them, after due conſideration. 'It appears then upon the whole, that the ancients were acquainted 'with muſic in parts, but did not generally make uſe of it *.'

* Principles and Power of Harmony, p. 133. The ſpeech in the original, containing the paſſage of which it is pretended that above is a tranſlation, is here given at length, as it ſtands in the edition of Plato, by Marſilius Ficinus; which is what this author appears to have made uſe of: Τάτων τοίνυν δεῖ χάριν τοῖς φθόγγοις τῆς λύρας προσχρῆσθαι, σαφηνείας

Whoever will be at the pains of comparing the diſcourſe of Dr. Wallis, above-cited, and his appendix to Ptolemy, with the ſeveral paragraphs in the Principles and Power of Harmony, relating to the queſtion in debate, and calculated, as the author profeſſes, to vindicate the Greek muſic, will diſcover in the one the modeſty of a philoſopher, and in the other the arrogance of a dogmatiſt.

Opinions delivered in terms ſo poſitive, and indeed ſo contemptuous, as this latter writer has choſen to make uſe of *, are an affront to the underſtandings of mankind, who are not to be ſuppoſed ready to acquieſce in the notions of others merely becauſe they are propagated with an unbecoming confidence: and as to the judgment of this author on the queſtion in debate, the leaſt that can be ſaid of it is, that it is founded in miſtake and ignorance of his ſubject; for, firſt, it is very ſtrange, ſeeing how much the powers of harmony exceed thoſe of mere melody, that the ancients, when once they had found themſelves in poſſeſſion of ſo valuable an improvement as ſymphoniac muſic, ſhould ever forego it. The moderns in this reſpect were wiſer than their teachers, for no ſooner did they diſcover the excellence of muſic in parts than they ſtudied to improve it, and have cultivated it with great care ever ſince. Secondly, this writer, in ſupport of his opinion, has been driven to the neceſſity of tranſlating thoſe words of his author which he thinks make moſt for his purpoſe, in a manner which he confeſſes is liable to objections, and into ſuch Engliſh phraſe as, in the opinion of many, is not intelligible. Thirdly and laſtly, this very paſſage of Plato, upon which he lays ſo much ſtreſs, was diſcovered above fifty years ago, and adduced

νείας ἕνεκα τῶν χορδῶν, τόν τε κιθαριστὴν καὶ τὸν παιδευόμενον, ἀποδιδόντας πρόσχορδα τὰ φθέγματα τοῖς φθέγμασι· τὴν δ' ἑτεροφωνίαν καὶ ποικιλίαν τῆς λύρας, ἄλλα μὲν μέλη τῶν χορδῶν ἴσων, ἄλλα δὲ τῷ τὴν μελῳδίαν ξυνθέντι ποιητέ· καὶ δὴ καὶ πυκνότητα μανότητι, καὶ τάχει βραδυτῆτι, καὶ ὀξύτητα βαρύτητι, σύμφωνον καὶ ἀντίφωνον παρεχομένους, καὶ τῶν ῥυθμῶν ὡσαύτως παντοδαπὰ ποικίλματα προταρμότοντας τοῖσι φθέγγοις τῆς λύρας· πάντα ἂν τὰ τοιαῦτα μὴ προσφέρειν τοῖς μέλλουσιν ἐν τρισὶν ἔτεσι τὸ τῆς μουσικῆς χρήσιμον ἐκλήψεσθαι διὰ τάχους. τὰ γὰρ ἐναντία, ἄλληλα παράττοντα δυσμαθίαν παρέχει. δεῖ δὲ ὅτι μάλιστα εὐμαθεῖς εἶναι τοὺς νέους.

* As where he inſinuates a reſemblance between thoſe who doubt the truth of his aſſertions and the moſt ignorant of mankind, in theſe words: 'If all theſe circumſtances are 'not ſufficient to gain our belief, merely becauſe we moderns have not the ſame muſical 'power, then have the Kamſchatcans a right to decide that it is impoſſible to foretel an 'eclipſe, or to repreſent all the elements of ſpeech by about twenty four marks.'

for the very purpoſe for which he has cited it, by Monſ. l'Abbé Fraguier, a member of the Academy of Inſcriptions and Belles Lettres, and occaſioned a controverſy, the reſult whereof will preſently be related.

Monſieur Fraguier had entertained a high opinion of the Greek muſic, and a belief that the ancients were acquainted with muſic in conſonance; in ſupport of which latter opinion he produced to the academy the paſſage above-cited, which is to be found in Plato de Legibus, lib. VII *. He alſo produced for the ſame purpoſe a paſſage in Cicero de Republica, and another from Macrobius, both which are given in the note ſubjoined †.

The arguments deduced by Monſ. Fraguier from theſe ſeveral paſſages, were learnedly refuted by Monſ. Burette, a member alſo of the academy: and as to the interpretations which Monſ. Fraguier had put upon them, the ſame Monſ. Burette demonſtrated that they were forced and unwarranted, either by the context or the practice of the ancients.

The ſubſtance of theſe arguments is contained in a paper or memoir entitled Examen d'un Paſſage de Platon ſur la Muſique, which may be ſeen in the Hiſtory of the Academy of Inſcriptions, tom. III. pag. 118. This queſtion was farther proſecuted by the ſame parties, as appears by ſundry papers in the ſubſequent volumes of the Hiſtory and Memoirs of the above Academy; and in the courſe of the controverſy the paſſages above-cited from Ariſtotle, Seneca, Caſſidorus, and others, were ſeverally inſiſted on. As to thoſe from Cicero and Macrobius, and this from Horace,

Sonante miſtum tibiis carmen lyra,
Hac Dorium, illis Barbarum.

Ad Mecænat. Epod. ix.

* In Stephens's edition it is pag. 812, and in that of Marſilius Ficinus 895.

† 'Ut in fidibus, ac tibiis atque cantu ipſo, ac vocibus concentus eſt quidam tenendus 'ex diſtinctis ſonis, quem immutatum ac diſcrepantem aures eruditæ ferre non poſſunt; 'iſque concentus ex diſſimilimarum vocum moderatione concors tamen efficitur et con-'gruens: ſic ex ſummis, et infimis, et mediis interjectis ordinibus, ut ſonis, moderata 'ratione civitas, conſenſu diſſimilimorum concinit; et quæ harmonia a muſicis dicitur in 'cantu, ea eſt in civitate concordia.' Cicer. lib. ii. de Repub. Fragm. pag. 527, tom. III.

'Vides quam multorum vocibus chorus conſtet una tamen ex omnibus redditur. Ali-'qua eſt illic acuta, aliqua gravis, aliqua media: accedunt viris feminæ: interponuntur 'fiſtula. Ita ſingulorum illic latent voces, omnium apparent, et fit concentus ex diſſonis.' Macrob. Saturnalior. Proem.

which

which had formerly been adduced for the ſame purpoſe, they went but a very little way towards proving the affirmative of the queſtion in debate. Monſ. Burette took all theſe into conſideration; he admits, that the ancients made uſe of the octave and the fifteenth, the former in a manner reſembling the drone of a bag-pipe; and he allows that they might accidentally, and without any rule, uſe the fourth and fifth; but this is the fartheſt advance he will allow the ancients to have made towards the practice of ſymphoniac muſic; for as to the imperfect conſonances and the diſſonances, he ſays they were ignorant of the uſe and application of all of them in harmony: and finally he demonſtrates, by a variety of arguments, that the ancients were abſolute ſtrangers to muſic in parts.

Martini, in his Storia Muſica, vol. I. pag. 172, has given an abridgment of this controverſy, as it lies diſperſed in the ſeveral volumes of the Memoirs of the Academy of Inſcriptions, and acquieſces in the opinion of Monſ. Burette, who, upon the whole, appears to have ſo much the advantage of his opponents, that it it is highly probable this diſpute will never be revived.

To ſpeak of the ancient Greek muſic in general, thoſe who reflect on it will be inclined to acquieſce in the opinion of Dr. Wallis, who ſays, he takes it for granted, 'that much of the reports concerning 'the great effects of muſic in former times, beyond what is to be 'found in latter ages, is highly hyperbolical, and next door to fabu-'lous; and therefore, he adds, great abatements muſt be allowed to 'the elogies of their muſic.' Certainly many of the relations of the effects of muſic are either fabulous or to be interpreted allegorically, as this in Horace:

* The learned Dr. Jortin, who, with the character of a very worthy man and a profound ſcholar, poſſeſſed that of a learned muſician, has delivered his ſentiments on this queſtion in the following terms: 'One would think that an ancient muſician, 'who was well acquainted with concords and diſcords, who had an inſtrument of many 'ſtrings or many keys to play upon, and two hands and ten fingers to make uſe of, 'would try experiments, and would fall into ſomething like counterpoint and compoſition 'in parts. In ſpeculation nothing ſeems more probable, and it ſeemed more than probable 'to our ſkilful muſician Dr. Pepuſch, when I once converſed with him upon the ſubject; 'but in fact it doth not appear that the ancients had this kind of compoſition, or rather it 'appears that they had not; and it is certain, that a man ſhall overlook diſcoveries which 'ſtand at his elbow, and in a manner intrude themſelves upon him.' Letter to Mr. Aviſon, 'publiſhed in the ſecond edition of his Eſſay on Muſical Expreſſion, pag. 36.

Silveſtres

Silveſtres homines ſacer interpreſque Deorum,
Cædibus & victu fœdo deterruit Orpheus;
Dictus ob hoc lenire tigres rabidoſque leones.
Dictus & Amphion, Thebanæ conditor Arcis,
Saxa movere ſono teſtudinis, & prece blanda.
Ducere quo vellet.

ARTE POETICA, lib. II. l. 391.

The wood-born race of men, when Orpheus tam'd,
From acorns and from mutual blood reclaim'd,
This prieſt divine was fabled to aſſuage
The tiger's fierceneſs, and the lion's rage.
Thus roſe the Theban wall; Amphion's lyre
And ſoothing voice the liſt'ning ſtones inſpire.

FRANCIS.

Hyperbolical expreſſions of the power and efficacy of muſic ſignify but little; for theſe convey nothing more than the ideas of the relator: and every man ſpeaks in the higheſt terms he can invent of that, whatever it be, that has adminiſtered to him the greateſt delight. How has the poet, in the Proluſions of Strada, laboured in deſcribing the conteſt between the nightingale and the luteniſt! and what does that celebrated poem contain, but a profuſion of words without a meaning?

To conclude, every one that underſtands muſic is enabled to judge of the utmoſt effects of a ſingle pipe, by hearing the flute, or any other ſingle ſtop, finely touched on the organ: and as to the lyre, whether of three, four, ſeven, or ten ſtrings, it is impoſſible but that it muſt have been greatly inferior to the harp, the lute, and many other inſtruments in uſe among the moderns.

Having taken a view of the ſtate of muſic in the earlier ages of the world, and traced the ancient ſyſtem from its rudiments to its perfection, and thereby brought it down to nearly the cloſe of the third century, we ſhall proceed to relate the ſeveral ſubſequent improvements that have from time to time been made of it, in the order in which they ocurred; and ſhew to whom we owe that ſyſtem, which for its excellence is now univerſally adopted by the civilized world.

We have ſeen that hitherto the ſcience of muſic, as being a ſubject of very abſtracted ſpeculation, and as having a near affinity with

arithmetic and geometry, had been ſtudied and taught by ſuch only as were eminent for their ſkill in thoſe ſciences: of theſe the far greater number were Greeks, who, in the general eſtimation of mankind, held the rank of philoſophers. The accounts hereafter given of the Latin writers, ſuch as Martianus Capella, Macrobius, Caſſiodorus, and others, will ſhew how little the Romans contributed to the improvement of muſic; and in general their writings are very little more than abridgments of, or ſhort commentaries on the works of Nicomachus, Euclid, Ariſtides, Quintilianus, Ariſtoxenus, and others of the ancient Greeks. As to Boetius, of whom we ſhall ſpeak hereafter, it is clear that his intention was only to reſtore to thoſe barbarous times in which he lived, the knowledge of the true principles of harmony, and to demonſtrate, by the force of mathematical reaſoning, the proportions and various relations to each other, of ſounds; in the doing whereof he evidently ſhews himſelf to have been a Pythagorean. As this was the deſign of his treatiſe De Muſica, we are not to wonder that the author has ſaid ſo little of the changes that muſic underwent among the Latins, or that he does but juſt hint at the diſuſe of the enarmonic and chromatic genera, and the introduction of the Roman characters in the room of the Greek.

It muſt however be admitted, that for one improvement of the ſyſtem we are indebted to the Latins, namely, the application of the Roman capital letters to the ſeveral ſounds that compoſe the ſcale, whereby they got rid of that perplexed method of notation invented by the Greeks: we have ſeen, by the treatiſe of Alypius, written profeſſedly to explain the Greek muſical characters, to what an amazing number they amounted, 1240 at the loweſt computation; and after all, they were no better than ſo many arbitrary marks or ſigns placed on a line over the words of the ſong, and, having no real inherent or analogical ſignification, muſt have been an intolerable burthen on the memory. Theſe the Latins rejected, and in their ſtead introduced the letters of their own alphabet, A, B, C, D, E, F, G, H, I, K, L, M, N, O, P, fifteen in number, and ſufficient to expreſs every ſound contained in the biſdiapaſon. If it be aſked, how could this ſmall number ſerve the purpoſe of more than 1200? the anſwer is, that this amazing multiplicity of characters aroſe from the neceſſity of diſtinguiſhing each ſound with reſpect to the genus, and alſo the mode in which it was uſed; and before this innovation of the

Romans,

Romans, we are aſſured, that both the enarmonic and chromatic genera were grown out of uſe, and that the diatonic genus, on account of its ſweetneſs and conformity to nature, was retained amongſt them: and as to the modes, there is great reaſon to ſuſpect, that even at the time when Ptolemy wrote, the doctrine of them was but ill underſtood; fifteen characters, we know, are at this time ſufficient to denote all the ſounds in a diatonic biſdiapaſon, and conſequently muſt have been ſo then.

It has already been obſerved, that the ſcience of harmony was anciently a ſubject of philoſophical enquiry; and it is manifeſt, from the account herein before given of them and their writings, that the Greeks treated it as a ſubject of very abſtract ſpeculation, and that they neither attended to the phyſical properties of ſound, nor concerned themſelves with the practice of muſic, whether vocal or inſtrumental. Ptolemy was one of the laſt of the Greek harmonicians; and from his time it may be obſerved, that the cultivation of muſic became the care of a ſet of men, who, then at leaſt, made no pretenſions to the character of philoſophers. This may be accounted for either by the decline of philoſophy about this period, or by the not improbable ſuppoſition, that the ſubject itſelf was exhauſted, and that nothing remained but an improvement in practice on that foundation which the ancient writers, by their theory, had ſo well laid. But whatever may have been the cauſe, it is certain, that after the eſtabliſhment of Chriſtianity the cultivation of muſic became the concern of the church: to this the Chriſtians were probably excited by the example of the Jews, among whom muſic made a conſiderable part of divine worſhip, and the countenance given to it in the writings of St. Paul. Nor is it to be wondered at by thoſe who conſider the effects of muſic, its influence on the paſſions, and its power to inſpire ſentiments of the moſt devout and affecting kind, if it eaſily found admittance into the worſhip of the primitive Chriſtians: as to the ſtate of it in the three firſt centuries, we are very much at a loſs; yet it ſhould ſeem from the information of St. Auguſtine, that in his time it had arrived at ſome degree of perfection; poſſibly it had been cultivating, both in the Eaſtern and Weſtern empire, from the firſt propagation of Chriſtianity. The great number of men who were drawn off from ſecular purſuits by their religious profeſſion, amidſt the barbariſm of the times, thought themſelves laudably employed in the ſtudy of a

ſcience

ſcience which was found to be ſubſervient to religion: while ſome were engaged in the oppugning heretical opinions, others were taken up in compoſing forms of devotions, framing liturgies; and others in adapting ſuitable melodies to ſuch pſalms and hymns as had been received into the ſervice of the church, and which made a very conſiderable part of the divine offices: all which is the more probable, as the progreſs of human learning was then in a great meaſure at a ſtand.

But as the introduction of muſic into the ſervice of the church ſeems to be a new æra, it is neceſſary to be a little more particular, and relate the opinions of the moſt authentic writers, as well as to the reception it at firſt met with, as its ſubſequent progreſs among the converts to Chriſtianity. If among the accounts to be given of theſe matters, ſome ſhould carry the appearance of improbability, or ſhould even verge towards the regions of fable, let it be remembered, that very little credit would be due to hiſtory, were the writer to ſuppreſs every relation againſt the credibility whereof there lay an objection. Hiſtory does not propoſe to tranſmit barely matters of real fact, or opinions abſolutely irrefragable; falſehood and error may very innocently be propagated, nay the general belief of falſehood, or the exiſtence of any erroneous opinion, may be conſidered as facts; and then it becomes the duty of an hiſtorian to relate them. Whoever is converſant with the eccleſiaſtical hiſtorians muſt allow that the ſuperſtition of ſome, and the enthuſiaſm of others of them, have ſomewhat abated the reverence due to their teſtimony. But notwithſtanding this, the characters of Euſebius, Socrates, Sozomen, Theodoret, and Evagrius, for veracity and good intelligence, ſtand ſo high in the opinion of all ſober and impartial men, that it is impoſſible to with-hold our aſſent from the far greater part of what they have written on this ſubject.

The advocates for the high antiquity of church-muſic urge the authority of Saint Paul in its favour, who, in his Epiſtle to the Epheſians, charges them to ſpeak to themſelves in pſalms, and hymns, and ſpiritual ſongs, ſinging and making melody in their hearts to the Lord *; and who exhorts the Coloſſians to teach and admoniſh one another in pſalms, hymns, and ſpiritual ſongs †. Cardinal Bona is one of theſe; and he ſcruples not to aſſert, on the authority of theſe two paſſages,

* Chap. v. verſe 19. † Chap. iii. verſe 16.

that ſongs and hymns were, from the very eſtabliſhment of the church, ſung in the aſſemblies of the faithful. Johannes Damaſcenus goes farther back; and relates, that at the funeral of the Bleſſed Virgin, which was celebrated at Gethſemane, the apoſtles, aſſiſted by angels, continued ſinging her requiem for three whole days inceſſantly. The ſame author, ſpeaking of the ancient hymn called the Triſagion, dates its original from a miracle that was performed in the time of Proclus, the archbiſhop: his account is, that the people of Conſtantinople being terrified with ſome portentous ſigns that had appeared, made ſolemn proceſſions and applications to the Almighty, beſeeching him to avert the calamities that ſeemed to threaten their city, in the midſt whereof a boy was caught from among them, and taken up to heaven; who, upon his return, related, that he had been taught by angels to ſing the hymn, in Greek,

Αγιος ο Θεος, αγιος ιχυρος, αγιος αθανατος, ελεησον ημας.

Holy God, holy and ſtrong, holy and immortal, have mercy upon us.

The truth of this relation is queſtioned by ſome, who yet credit a viſion of St. Ignatius; of which Socrates, the eccleſiaſtical hiſtorian, gives the following account: 'St. Ignatius, the third biſhop of Antioch, in Syria, after the apoſtle Peter, who alſo converſed familiarly 'with the apoſtles, ſaw the bleſſed ſpirits above ſinging hymns to the 'Sacred Trinity alternately, which method of ſinging, ſays the ſame 'hiſtorian, Ignatius taught to his church; and this, together with an 'account of the miracle which gave riſe to it, was communicated 'to all the churches of the Eaſt*.' Nicephorus, St. Chryſoſtom, Amalarius, and ſundry others, acquieſce in this account of the origin of antiphonal ſinging; as do our countrymen, Hooker, Hammond, Beveridge, and Dr. Comber.

By the Apoſtolical Conſtitutions, ſaid to have been, if not compiled by the apoſtles themſelves, at leaſt collected by Clement, a diſciple of theirs, the order of divine worſhip is preſcribed; wherein it is expreſly required, that after the reading the two leſſons, one of the preſbyters ſhould ſing a pſalm or hymn of David; and that the people ſhould join in ſinging at the end of each verſe. It would be too little to ſay of this collection, that the authority of it is doubted, ſince it is agreed, that it did not appear in the world till the fourth century;

* Hiſt. Eccleſ. lib. VI. cap. viii.

and the opinions of authors are, that either it is ſo interpolated as to deſerve no credit, or that the whole of it is an abſolute forgery.

Hitherto, then, the high antiquity of church-muſic ſtands on no better a foundation than tradition, backed with written evidence of ſuch a kind as to have ſcarce a pretence to authenticity: there are, however, accounts to be met with among the writers of eccleſiaſtical hiſtory, that go near to fix it at about the middle of the fourth century.

In ſhort the æra from whence we may reaſonably date the introduction of muſic into the ſervice of the church, is that period during which Leontius governed the church of Antioch; that is to ſay, between the years of Chriſt 347 and 356, when Flavianus and Diodorus, afterwards biſhops, the one of Antioch and the other of Tarſus, divided the choriſters into two parts, and made them ſing the Pſalms of David alternately, Theodoret. Hiſt. Eccl. lib. II. cap. xxiv.; a practice, ſays the ſame author, which began firſt at Antioch, and afterwards ſpread itſelf to the end of the world. Valeſius acquieſces in this account, and profeſſes to wonder whence Socrates had the ſtory of Ignatius's viſion, Valeſ. in Socrat. lib. VI. cap. viii. The occaſion of antiphonal ſinging ſeems to have been this: Flavianus and Diodorus, although then laymen, but engaged in a monaſtic life, were in great repute for their ſanctity; and Leontius, their biſhop, was an avowed Arian, whom they zealouſly oppoſed: in order to draw off the people from an attendance on the biſhop, who, in the opinion of Flavianus and Diodorus, was a preacher of hereſy, they ſet up a ſeparate aſſembly for religious worſhip, in which they introduced antiphonal ſinging, which ſo captivated the people, that the biſhop, to call them back again, made uſe of it alſo in his church. Flavianus, it ſeems, had an high opinion of the efficacy of this kind of muſic; for it is reported, that the city of Antioch having, by a popular ſedition, incurred the diſpleaſure of the emperor Theodoſius, ſent Flavianus to appeaſe him, and implore forgiveneſs; who, upon his firſt audience, though in the imperial palace, directed the uſual church-ſervice, to be ſung before him: the emperor melted into pity, wept, and the city was reſtored to his favour. Other inſtances are to be met with in hiſtory, that ſhew the fondneſs of the people of Antioch for this kind of muſic; and which favour the ſuppoſition, that amongſt them it took its riſe.

Antioch was the metropolis of Syria; the example of its inhabitants was ſoon followed by the other churches of the eaſt; and in a very few ages after its introduction into the divine ſervice, the practice of ſinging in churches not only received the ſanction of public authority, but thoſe were forbid to join in it who were ignorant of muſic. For at the council of Laodicea, held between the years of Chriſt 360, and 370, a canon was made, by which it was ordained, That none but the canons, or ſinging-men of the church, which aſcend the Ambo *, or ſinging-deſk, and ſing out of the parchment, [ſo the words are] ſhould preſume to ſing in the church. Balſamon ſeems to think that the fathers intended nothing more than to forbid the ſetting or giving out the hymn or pſalm by the laity: but the reaſon aſſigned by Baronius for the making this canon, ſhews that it was meant to exclude them totally from ſinging in the church-ſervice; for he ſays that when the people and the clergy ſang promiſcuouſly, the former, for want of ſkill, deſtroyed the harmony, and occaſioned ſuch diſcord as was very inconſiſtent with the order and decency requiſite in divine worſhip. Zonanus confirms this account, and adds, that theſe canonical ſingers were reckoned a part of the clergy †. Balſamon, in his ſcholia on this canon, ſays, that before the Laodicean council, the laity were wont, in contempt of the clergy, to ſing, in a very rude and inartificial mannner, hymns and ſongs of their own invention; to obviate which practice, it was ordained by this canon that none ſhould ſing but thoſe whoſe office it was. Our learned countryman Bingham declares himſelf of the ſame opinion in his Antiquities of the Chriſtian Church, book III. chap. vii. and adds, that from the time of the council of Laodicea the pſalmiſtæ, or ſingers, were called κανονικοι ψαλται, or canonical ſingers, though he is inclined to think the proviſion in the canon only temporary.

* The Ambo was what we now call the Reading deſk, a place made on purpoſe for the readers and ſingers, and ſuch of the clergy as miniſtred in the firſt ſervice called Miſſa Catechumenorum. It had the name of Ambo, not as Walafridus Strabo imagines, 'ab ambiendo,' becauſe it ſurrounded them that were in it, but from ἀναβαινειν, becauſe it was a place of eminency, to which they went up by degrees or ſteps. Bingham's Antiquities of the Chriſtian Church, book VIII. chap v. § 4.

† It ſeems they were one of the many orders in the primitive church, and that they received ordination at the hands, not of the biſhop or choriepiſcopus, but of a preſbyter, uſing this form of words, preſcribed by the canon of the fourth council of Carthage. 'See 'that thou believe in thy heart what thou ſingeſt with thy mouth; and approve in thy 'works what thou believeſt in thy heart.' Bingh. Antiq. book III. chap. vii. § 4.

CHAP.

CHAP. IV.

GREAT ſtreſs is alſo laid on the patronage given to church-muſic by St. Baſil, St. Ambroſe, and St. Chryſoſtom; as to the firſt, he had part of his education at Antioch, where he was a continual ſpectator of that pompous worſhip which prevailed there. He was firſt made a deacon by Meletius, and afterwards, that is to ſay about the year 371, was promoted to the biſhoprick of Cæſarea in Cappadocia, his own country; and in this exalted ſtation he contracted ſuch a love for church-muſic, as drove him to the neceſſity of apologizing for it *. In his epiſtle to the Neocæſarian clergy, ſtill extant, he juſtifies the practice, ſaying, that the new method of ſinging, at which they were ſo offended, was now become common in the Chriſtian church, the people riſing before day and going to church, where, having made their confeſſions and prayers, they proceeded to the ſinging of pſalms: and, he adds, that in this holy exerciſe, the choir being divided into two parts, mutually anſwered each other, the precentor beginning, and the reſt following him. He farther tells them, that if to do thus be a fault, they muſt blame many pious and good men in Egypt, Lybia, Paleſtine, Arabia, Phœnicia, and Syria, and ſundry other places. To this they urged that the practice was otherwiſe in the time of their biſhop Gregory Thaumaturgus; in anſwer to which Baſil tells them, that neither was the Litany uſed in his time; and that in objecting to muſic, while they admitted the Litany, they ſtrained at a gnat and ſwallowed a camel.

St. Chryſoſtom, whoſe primitive name was John, was a native of Antioch, and received his education there, he was ordained a deacon by Meletius, and preſbyter by Flavianus; and having been accuſtomed to the pompous ſervice introduced by the latter into the church of Antioch, he conceived a fondneſs for it. When he became biſhop of Conſtantinople, which was about A. C. 380, he found occaſion to introduce muſic among his people: the manner of his doing it is thus related. The Arians in that city were grown very inſolent: they held conventicles at a ſmall diſtance without the walls; but on Saturdays and Sundays, which were ſet apart for the

* Valeſ. in Socrat. lib. IV. cap. xxvi.

public

public aſſemblies, they were wont to come within the city, where, dividing themſelves into ſeveral companies, they walked about the porticos, ſinging ſuch words as theſe: 'Where are they who affirm 'three to be one power?' and hymns compoſed in defence of their tenets, adding petulant reflexions on the orthodox *; this they continued for the greateſt part of the night; in the morning they marched through the heart of the city, ſinging in the ſame manner, and ſo proceeded to the place of their aſſembly. In oppoſition to theſe people, St. Chryſoſtom cauſed hymns to be ſung in the night; and to give his performance a pomp and ſolemnity, which the other wanted, he procured croſſes of ſilver to be made at the charge of the empreſs Eudoxia, which, with lighted torches thereon, were borne in a proceſſion, at which Briſo, the empreſs's eunuch officiated as precentor; this was the occaſion of a great tumult, in which Briſo received a wound in the forehead with a ſtone, and ſome on both ſides were ſlain †. This was followed by a ſedition, which ended in the expulſion of the Arians. This manner of ſinging, thus introduced by them, was, as Sozomen relates ‡, uſed in Conſtantinople from that time forwards; however, in a ſhort time it was performed in ſuch an unſeemly way as gave great offence; for the ſingers, affecting ſtrange geſtures and boiſterous clamours, converted the church into a

* It ſeems that the orthodox could in their turns not only be petulant, but induſtrious in provoking their enemies to wrath, as may be collected from the following relation of Theodoret.

'Publia, the deaconeſs, a woman admired and celebrated for her piety, was the mother 'of the famous John, who for many years was firſt preſbyter of the church of the Antioch, 'and though often and unanimouſly elected to the apoſtolic throne, refuſed that dignity. 'She, and a chorus of conſecrated virgins with her, ſpent great part of their time in ſinging 'anthems and divine ſongs; and once when the emperor [Julian] had occaſion to paſs by 'them, they ſung pſalms choſen purpoſely to expoſe and ridicule the extravagancies of hea'theniſm and idolatry, ſinging them with an exalted voice; and among the reſt they ap'plied, very properly to the occaſion, the hundred and fifteenth, from the fourth to the 'eighth verſe, "Their idols are ſilver and gold, even the work of men's hands, &c." "Let "thoſe that make them be like unto them, and alſo all ſuch as put their truſt in them." 'This ſo diſturbed the emperor, that he commanded ſilence ſhould be kept whenever he 'came by that place, but to ſo little purpoſe, that upon his returning, at the motion of Pub'lia they gave him another welcome in theſe words: "Let God ariſe, and let his enemies "be ſcattered." And now his anger was raiſed ſo high, that he ordered the chantreſs to 'be brought before him, and had her beat on the face till her cheeks were ſtained with 'blood; which efforts of the tyrant's unmanly paſſion the aged good woman received with 'pleaſure, went home, and, as often as an opportunity offered, entertained him ſtill with 'the very ſame ſort of diſagreeable compoſitions.' Hiſt. Eccleſ.

† Socrat. Hiſt. Eccleſ. lib. VI. cap. viii.

‡ Hiſt. Eccleſ. lib. VIII. cap. viii.

mere

mere theatre; for which Chryſoſtom reproved them, by telling his people that their rude voices and diſorderly behaviour were very improper for a place of worſhip, in which all things were to be done with reverence to that Being who obſerves the behaviour of every one there.

St. Ambroſe, who had entertained a ſingular veneration for St. Baſil, like him was a great lover of the church-ſervice: it is true he was not originally an eccleſiaſtic, but having been unexpectedly elected biſhop of Milan, he applied himſelf to the duties of the epiſcopal function. Juſtina, whom the emperor Valentinian had married, proving an Arian, commenced a proſecution againſt Ambroſe and the orthodox; during which the people watched all night in the church, and Ambroſe appointed that pſalms and hymns ſhould be ſung there after the manner of the oriental churches, leſt the people ſhould pine away with the tediouſneſs of ſorrow; and from this event, which happened about 374, we may date the introduction of ſinging into weſtern churches.

But the zeal of St. Ambroſe to promote this practice, is in nothing more conſpicuous than in his endeavours to reduce it into form and method; as a proof whereof, it is ſaid that he, jointly with St. Auguſtine, upon occaſion of the converſion and baptiſm of the latter, compoſed the hymn Te Deum laudamus, which even now makes a part of the liturgy of our church, and cauſed it to be ſung in his church at Milan; but this has been diſcovered to be a miſtake*: this however is certain, that he inſtituted that method of ſinging, known by the name of the Cantus Ambroſianus, or Ambroſian Chant, a name, for ought that now appears, not applicable to any determined ſeries of notes, but invented to expreſs in general a method of ſinging agreeable to ſome rule given or taught by him. This method, whatever it was, is ſaid to have had a reference to the modes of the ancients, or rather to thoſe of Ptolemy, which we have ſhewn to have been preciſely coin-

* The very learned Dr. Uſher, upon the authority of two ancient manuſcripts, aſſerts the Te Deum to have been made by a biſhop of Triers, named Nicetius or Nicettus, and that not till about the year 500, which was almoſt a century after the death both of St. Ambroſe and St. Auguſtine. L'Eſtrange's Alliance of Divine Offices, 79. The Benedictines, who publiſhed the works of St. Ambroſe, judge him not to have been the author of it; and Dr. Cave, though at one time he was of a different judgment, and biſhop Stillingfleet concur in the opinion that the Te Deum was not the compoſition of St. Ambroſe, or of him and St. Auguſtine jointly. Bingham's Antiquities of the Chriſtian Church, book XIV. chap. ii. § 9.

cident

cident with the ſeven ſpecies of the diapaſon; but St. Ambroſe conceiving all above four to be ſuperfluous, reduced them to that number, retaining only the Dorian, the Phrygian, the Lydian, and the Mixolydian *, which names he rejected, chuſing rather to diſtinguiſh them by epithets of number, as protos, deuteros, tritos, tetrartos. His deſign in this was to introduce a kind of melody founded on the rules of art, and yet ſo plain and ſimple in its nature, that not only thoſe whoſe immediate duty it was to perform the divine ſervice, but even the whole congregation might ſing it; accordingly in the Romiſh countries the people now join with the choir in chanting the divine offices; and if we may credit the relations of travellers in this reſpect, this diſtinguiſhed ſimplicity of the Ambroſian Chant is even at this day to be remarked in the ſervice of the church of Milan, where it was firſt inſtituted.

A particular account of the eccleſiaſtical modes, as originally conſtituted by St. Ambroſe, with the ſubſequent improvement of them by Gregory the Great, is reſerved for another place: in the interim it is to be noted that the eccleſiaſtical modes are alſo called tropes, but more frequently tones; which latter appellation was firſt given to them by Martianus Capella, as we are informed by Sir Henry Spelman, in his Gloſſary, voce FRIGDORÆ. The following ſcheme repreſents the progreſſion in each.

d	e	f	g
c	d	e	f
b♮	c	d	e
a	b♮	c	d
G	a	b♮	c
F	G	a	b♮
E	F	G	a
D	E	F	G

And this was the original inſtitution of what are called, in contradiſtinction to the modes or moods of the ancients, the eccleſiaſtical modes or tones. Theſe of St. Ambroſe, however well calculated for uſe and practice, were yet found to be too much reſtrained, and not to admit of all that variety of modulation which the ſeveral offices in the church-

* Sir Henry Spelman in his Gloſſary, voce FRIGDORÆ, in the place of the Mixolydian puts the Æolian.

ſervice

ſervice ſeemed to require; and accordingly St. Gregory, ſurnamed the Great, the firſt pope of that name, with the aſſiſtance of the moſt learned and ſkilful in the muſic of that day, ſet about an amendment of the Cantus Ambroſianus, and inſtituted what became known to later times by the name of the Cantus Gregorianus, or, the Gregorian Chant: but as this was not till near two hundred and thirty years after the time of St. Ambroſe, the account of this, and the other improvements made in muſic by St. Gregory, muſt be referred to another place.

With reſpect to the muſic of the primitive church, though it conſiſted in the ſinging of pſalms and hymns, yet was it performed in ſundry different manners, that is to ſay, ſometimes the pſalms were ſung by one perſon alone, the reſt hearing with attention; ſometimes they were ſung by the whole aſſembly; ſometimes alternately, the congregation being for that purpoſe divided into ſeparate choirs; and, laſtly, by one perſon, who repeated the firſt part of the verſe, the reſt joining in the cloſe thereof *.

Of the four different methods of ſinging above enumerated, the ſecond and third were very properly diſtinguiſhed by the names of ſymphony and antiphony, and the latter was ſometimes called reſponſaria †; and in this, it ſeems, women were allowed to join, notwithſtanding the apoſtle's injunction on them to keep ſilence.

The method of ſinging in the laſt place above mentioned, clearly ſuggeſts the origin of the office of precentor of a choir, whoſe duty, even at this day, it is to govern the choir, and ſee that the choral ſervice be reverently and juſtly performed.

It farther appears, that almoſt from the time when muſic was firſt introduced into the ſervice of the church, it was of two kinds, and conſiſted in a gentle inflection of the voice, which they termed plain-ſong, and a more artificial and elaborate kind of muſic, adapted to the hymns and ſolemn offices contained in its ritual; and this diſtinction has been maintained through all the ſucceeding ages, even to this time.

* Bingham's Antiq. book XIV. chap. i.

† In this diſtinction between ſymphoniac and antiphonal pſalmody, we may diſcern the origin of the two different methods of ſinging practiſed in the Romiſh and Lutheran churches, and of thoſe that follow the rule of Calvin, and others of the reformers; in the former the ſinging is antiphonal, in the latter it is a plain metrical pſalmody, in which all join; ſo that for each practice the authority of the primitive church may be appealed to.

Beſides the reverend fathers of the church above mentioned, we are told, and indeed it appears from many paſſages in his writings, that SAINT AUGUSTINE was a paſſionate lover of muſic; this which follows, taken from his Confeſſions, lib. IX. cap. vi. is the moſt commonly produced as an evidence of his approbation of muſic in the church-ſervice, though, it muſt be owned, he lived to recant it: 'How abundantly did I weep before God, to hear thoſe hymns of 'thine; being touched to the very quick, by the voices of thy ſweet 'church-ſong. The voices flowed into my ears, and thy truth 'pleaſingly diſtilled into my heart; which cauſed the affections of 'my devotion to overflow, and my tears to run over; and happy 'did I find myſelf therein.' From hence there is little reaſon to doubt, that he enjoined the uſe of it to the clergy of his dioceſe. He wrote a treatiſe De Muſica, in ſix books, chiefly, indeed, on the ſubject of metre and the laws of verſification, but interſperſed with ſuch obſervations on the nature of the conſonances, as ſhew him to have been very well ſkilled in the ſcience of muſic.

It is not neceſſary to enter into a particular character, either of St. Auguſtine or of this his work: thoſe who are acquainted with eccleſiaſtical hiſtory need not to be told, that he was a man of great learning, for the time he lived in, of lively parts, and of exemplary piety. To ſuch, however, whoſe curioſity is greater than their reading, the following ſhort account of this eminent father of the church may not be unpleaſing.

He was born at Thagaſte, a city of Numidia, on the 13th of November, 354. His father, a burgeſs of that city, was called Patricius; and his mother, Monica, who being a woman of great virtue, inſtructed him in the principles of the Chriſtian religion. In his early youth he was in the rank of the catechumens, and falling dangerouſly ill, earneſtly deſired to be baptized; but the violence of the diſtemper ceaſing, his baptiſm was delayed. His father, who was not yet baptized, made him ſtudy at Thagaſte, Madaura, and afterwards at Carthage. St. Auguſtine, having read Cicero's books of philoſophy, began to entertain a love for wiſdom, and applied himſelf to the ſtudy of the Holy Scriptures; nevertheleſs, he ſuffered himſelf to be ſeduced by the Manicheans. At the age of nineteen, he returned to Thagaſte,

gaſte, and taught grammar, and alſo frequented the bar: he afterwards taught rhetoric at Carthage, with applauſe. The inſolence of the ſcholars at Carthage made him take a reſolution to go to Rome, though againſt his mother's will. Here alſo he had many ſcholars; but diſliking them, he quitted Rome, and ſettled at Milan, and was choſen public profeſſor of rhetoric in that city. Here he had opportunities of hearing the ſermons of St. Ambroſe, which, together with the ſtudy of St. Paul's Epiſtles, and the converſion of two of his friends, determined him to retract his errors, and quit the ſect of the Manicheans: this was in the thirty-ſecond year of his age. In the vacation of the year 386, he retired to the houſe of a friend of his, named Verecundus, where he ſeriouſly applied himſelf to the ſtudy of the Chriſtian religion, in order to prepare himſelf for baptiſm, which he received at Eaſter, in the year 387. Soon after this, his mother came to ſee him at Milan, and invite him back to Carthage; but at Oſtia, whither he went to embark, in order to his return, ſhe died. He arrived in Africa about the end of the year 388, and having obtained a garden-plot without the walls of the city of Hippo, he aſſociated himſelf with eleven other perſons of eminent ſanctity, who diſtinguiſhed themſelves by wearing leathern girdles, and lived there in a monaſtic way for the ſpace of three years, exerciſing themſelves in faſting, prayer, ſtudy, and meditation, day and night: from hence ſprung up the Auguſtine friars, or eremites of St. Auguſtine, being the firſt order of mendicants; thoſe of St. Jerome, the Carmelites, and others, being but branches of this of St. Auguſtine. About this time, or as ſome ſay before, Valerius, biſhop of Hippo, againſt his will, ordained him prieſt: nevertheleſs, he continued to reſide in his little monaſtery, with his brethren, who, renouncing all property, poſſeſſed their goods in common. Valerius, who had appointed St. Auguſtine to preach in his place, allowed him to do it in his preſence, contrary to the cuſtom of the churches in Africa. He explained the creed, in a general council of Africa, held in 393. Two years after, Valerius, fearing he might be preferred to be biſhop of another church, appointed him his coadjutor or colleague, and cauſed him to be ordained biſhop of Hippo, by Megalius, biſhop of Calame, then primate of Numidia. St. Auguſtine died the 28th day of Auguſt, 430, aged ſeventy-ſix years, having had the misfortune to ſee his country invaded by the Vandals, and the city where he was biſhop beſieged for ſeven months.

The works of St. Auguſtine make ten tomes; the beſt edition of them is that of Maurin, printed at Antwerp, in 1700: they are but little read at this time, except by the clergy of the Greek church and in the Spaniſh univerſities; our bookſellers in London receive frequent commiſſions for them, and indeed for moſt of the fathers, from Ruſſia, and alſo from Spain.

About this time flouriſhed AMBROSIUS AURELIUS THEODOSIUS MACROBIUS, an author whoſe name appears in almoſt every catalogue of muſical writers extant; but whoſe works ſcarcely entitle him to a place among them. He lived in the time of Theodoſius the younger, who was proclaimed emperor of the Eaſt anno 402. He was a man of conſular dignity, and held the office of chamberlain to the emperor. Fabricius makes it a queſtion whether he was a Chriſtian or a Pagan. His works are a Commentary on the Somnium Scipionis of Cicero, in two books, and Saturnaliorum Conviviorum, in ſeven books; in both which he takes occaſion to treat of muſic, and more eſpecially the harmony of the ſpheres. The chief of what he ſays concerning muſic in general is contained in his Commentary on the Somnium Scipionis, and is taken from Nicomachus, and others of the followers of Pythagoras. Martini mentions alſo a diſcourſe on mundane muſic of his, which was tranſlated into Italian by Ercole Bottrigari, with notes; but he ſpeaks of it as a manuſcript, and by the liſt of the works of Macrobius, it does not appear to have ever been printed.

Of ſuch writers as Macrobius, and a few other of the Latins who will ſhortly be mentioned, that have written not profeſſedly on muſic, but have briefly or tranſiently taken notice of it in the courſe of a work written with ſome other view than to explain it, little is to be ſaid. There is nevertheleſs a Greek writer of this claſs, who lived ſome conſiderable time before Macrobius, and indeed was prior to Porphyry, the laſt of the Greek muſical writers that deſerves to be taken notice of, not ſo much becauſe he has contributed to the improvement of the ſcience, as becauſe in a voluminous work of his there are interſperſed a great variety of curious particulars relating to it, not to be found elſewhere. The author here meant is Athenæus the grammarian, called, by way of eminence, the Grecian Varro; he was born at Naucratis in Egypt, and flouriſhed in the third century; of many works that he wrote, one only remains, intitled The Deipnoſophiſts, that is to ſay, the Sophiſts at

Table, where he introduces a number of learned men of all profeſſions, who converſe upon various ſubjects at the table of a Roman citizen named Larenſius. In this work there are many very pleaſant ſtories, and an infinite variety of facts, citations, and alluſions, which make the reading of it extremely delightful. The little that he has ſaid of muſic lies ſcattered up and down in this work, which, with the Latin tranſlation of it, makes a large folio volume.

In his fourth book, pag. 174, he gives the names of the ſuppoſed inventors of the ancient muſical inſtruments, and, among others, of Cteſibius, and of the hydraulic organ conſtructed by him; and it is ſuppoſed that this is the moſt ancient and authentic account of that inſtrument now extant. He ſays, pag. 175, that the Barbiton or lyre, or, as Merſennus will have it, the viol, was the invention of Anacreon; and the Monaulon, or ſingle pipe, of the Egyptian Oſiris.

Elſewhere, viz. in his fourteenth book, he ſpeaks of the power of muſic, and of the fondneſs which the Arcadians, above all other people, entertained for it: and in the ſame book, pag. 637, he deſcribes that ſtrange inſtrument, invented by Pythagoras Zacynthius, called the tripod lyre, correſponding in every particular with the deſcription of it hereinbefore given from Blanchinus; to which may be added, that Athenæus expreſsly ſays that the three ſeveral ſets of chords between the legs, were in their tuning adjuſted to the three primitive modes, the Dorian, the Lydian, and the Phrygian.

Of this learned, curious, and moſt entertaining work, the beſt edition is that of Dalechamp, with the Greek original and Latin tranſlation in oppoſite columns. To this are added the animadverſions of Iſaac Caſaubon, which are very curious, and make another volume. In theſe it is ſaid that the Muſicorum διαγράμματα, or Tablatura, i. e. the art of writing or noting down of muſic, was invented by Stratonicus of Rhodes. If. Caſaub. Animadverſ. in Athenæum, lib. VIII. cap. xii.

Martianus Mineus Felix Capella was born, as Caſſiodorus teſtifies, at Madaura, a town in Africa, ſituated between the countries of Getulia and Numidia, lived at Rome under Leo the Thracian, viz. about the year of Chriſt 457; he was the author of a work intitled, De Nuptiis Philologiæ et Mercurii, the ſtyle whereof, in the opinion of ſome, is harſh, and rather barbarous, though others, and Fabricius

bricius in particular, who terms it a delightful fable *, think it in nowiſe deſerves ſuch a character: this work, which conſiſts of proſe and verſe intermixed, is in fact a treatiſe on the ſeven liberal ſciences, and conſequently includes a diſcourſe on muſic, which makes the ninth book thereof, and is introduced in the following manner: the author ſuppoſes the marriage of Philologia, a virgin, to Mercury, and that Venus and the other deities, as alſo Orpheus, Amphion, and Arion, are aſſembled to honour the ſolemnity; the Sciences, who, to render the work as poetical as may be, are repreſented as perſons, alſo attend, among whom is Harmonia, deſcribed as having her head decked with variety of ornaments, and bearing ſymbols of the faculty over which ſhe is feigned to preſide. She is made to exhibit the power of ſounds by ſuch melody as Jupiter himſelf commends, which is ſucceeded by a requeſt of Apollo and Minerva to unfold the myſteries of harmony. She firſt craves leave to relate that ſhe formerly was an inhabitant of the earth, and that through the inſpirations of Pythagoras, Ariſtoxenus, and others, ſhe had taught men the uſe of the lyre and the pipe; and by the ſinging of birds, the whiſtling of the winds, and the murmuring of water-falls, had inſtructed even the artleſs ſhepherds in the rudiments of melody. That by the power of her art ſhe had cured diſeaſes, quieted ſeditions, and compoſed and attempered the irregular affections of mankind; notwithſtanding all which, ſhe had been contemned and reviled by thoſe ſons of earth, and had therefore ſought the heavens, where ſhe found the motions of the orbs regulated by her own principles. She then proceeds to explain the precepts of harmony in a ſhort diſcourſe, which, if we conſider the ſubſtance and method rather than the ſtyle of it, muſt be allowed to be a very elegant compoſition, and by much the moſt intelligible of any ancient treatiſe on the ſcience of muſic now extant.

Capella concludes this ninth book of his treatiſe De Nuptiis thus:

'When Harmonia had run over theſe things concerning ſongs, and the 'ſweetneſs of verſe, in a manner both auguſt and perſuaſive, to the 'gods and heroes, who were very intent, ſhe decently withdrew; 'then Jupiter roſe up, and Cymeſis modulating in divine ſympho-'nies, came to the chamber of the virgin, to the great delight of all.'

* Biblioth. Lat. Art. CAPELLA.

The

The above diſcourſe of Martianus Capella is manifeſtly taken from Ariſtides Quintilianus, of which, to ſay the truth, it is very little more than an abridgment, but it is ſuch a one as renders it in ſome reſpects preferable to the original; for neither is it ſo prolix as Quintilian's treatiſe, nor does it partake of that obſcurity which diſcourages ſo many from the ſtudy of his work; and when it is ſaid, as it has been by ſome, that the ſtyle of Capella is barbarous, this muſt be taken as the opinion of grammarians, who, without regarding the intrinſic merit of any work, eſtimate it by certain rules of claſſical elegance, which they themſelves have eſtabliſhed as the teſt of perfection. It is by theſe men, and for this reaſon, and perhaps becauſe he had not the good fortune to be born at Rome, that Capella is termed a ſemi-barbarian, and his writings reprobated as unworthy the peruſal of men of ſcience *. But, notwithſtanding theſe opinions, one of the beſt grammarians of the preſent age, the learned and ingenious author of Hermes, or a Philoſophical Inquiry concerning Univerſal Grammar, has forborne to paſs a cenſure of barbarity on the ſtyle of this author: his ſentiment of him is, that he was rather a philologiſt than a philoſopher; a teſtimony that leaves him a better character than ſome of thoſe deſerve who have been ſo liberal in their cenſures of him. It has been ſaid above, that Fabricius has given to the treatiſe De Nuptiis the character of a delightful fable; and Gregory of Tours delivers his opinion of it at large in the following words: 'In grammatices docent legere, in 'dialecticis altercationum propoſitiones advertere, in rhetoricis per-'ſuadere, in geometricis terrarum linearumque menſuras colligere, in 'aſtrologicis curſus ſiderum contemplari, in arithmeticis numerorum

* The learned biſhop of Avranches is ſomewhat leſs ſevere in his cenſure. He gives the following character of Capella and his work. 'Martianus Capella has given the name 'of ſatire to his work becauſe it is written in verſe and proſe, and the profitable and enter-'taining parts are agreeably interwoven. His deſign is to treat of the arts, which have 'the appellation of liberal; and theſe he repreſents by certain allegorical perſonages, with 'attributes proper to each. The principal action in this fable is the marriage of Mercury 'and Philology, a feigned being, intended to ſignify the love of literature. The artifice 'of this allegory is not very ſubtle, and as to the ſtyle it is barbariſm itſelf; and for the 'figures, they are unpardonably bold and extravagant; beſides all which it is ſo obſcure 'as hardly to be intelligible; otherwiſe it is learned, and full of notions not common. 'Some write that the author was an African; if he was not, his harſh and forced ſtyle 'would induce one to believe he was of that country. The time he lived in is unknown; 'it only appears that he was more ancient than Juſtinian.' Huetius de l'Origine des Romaines.

'partes

' partes colligere, in harmoniis ſonorum modulationes ſuavium ac-
' centuum carminibus concrepare.' Hence it may ſeem that Mr. Malcolm was rather too haſty in condemning this work; and that in pronouncing of its author as he has done in his Treatiſe on Muſic, pag. 498, that he was but a ſorry copier from Ariſtides, he has done him injuſtice. Of Capella's work, De Nuptiis Philologiæ et Mercurii, there have been many editions; that of Meibomius is the moſt uſeful to a muſician; but there is a very good one, with corrections and notes, by Grotius, in octavo, publiſhed in 1559, when he was but fourteen years of age.

CHAP. V.

THE ſeveral works hereinbefore enumerated contain the whole of what, in the ſtrict ſenſe of the term, we are to underſtand by the ancient ſyſtem of muſic; and as many of them appear to be of very great antiquity, we are to eſteem it a ſingular inſtance of good fortune that they are yet remaining; that they are ſo, is owing to the care and induſtry of very many learned men, who, from public libraries, and other repoſitories, have ſought out the moſt correct manuſcripts of the reſpective authors, and given them to the world in print; as to Ariſtoxenus, the firſt in the liſt of the harmonical writers, it is doubtful whether his Elements ever appeared in print, till near the middle of the ſeventeeth century, inaſmuch as Morley, who lived in the reign of our queen Elizabeth, and was a very learned and inquiſitive man in all matters relating to muſical ſcience, profeſſes never to have ſeen the Elements of Ariſtoxenus; Euclid indeed had been publiſhed in the year 1498, in a Latin tranſlation of Georgius Valla, of Placentia, but under the name of Cleonidas. It was alſo, in 1557, publiſhed at Paris in Greek, with a new Latin tranſlation by Johannes Pena, mathematician to the French king, but in a very incorrect manner; other editions were alſo publiſhed of it, in which the errors of the former were multiplied. At length, with the aſſiſtance of our countrymen Selden, Gerard Langbaine, Marcus Meibomius, a man well acquainted with the ſcience, and well ſkilled in Greek literature, publiſhed it, together with Ariſtoxenus Nicomachus, Alypius, Gaudentius, Bacchius Senioris, Ariſtides Quintilianus, and the

ninth

ninth book of the fable de Nuptiis Philologiæ et Mercurii of Martianus Capella, with a Latin tranſlation of the firſt ſeven of the above-named writers, a general preface replete with excellent learning, and copious notes on them all.

Beſides the general preface, Meibomius has given a particular one to each author as they ſtand in his edition, which prefaces, as they contain a variety of particulars relating to the reſpective authors and their works, and are otherwiſe curious, are well worthy of attention. The Manual of Nicomachus was firſt publiſhed and tranſlated into Latin by Meibomius, who gives the author a very great character, and with great ingenuity fixes the time when he lived; for he obſerves that Nicomachus in the courſe of his work mentions Thraſyllus, who he ſays he thinks to be the ſame with one of that name mentioned frequently by Suetonius in Auguſtus and Tiberius, and by the old commentator on Juvenal, Sat. VI. as a famous mathematician; and from hence he infers that he lived after the time of Auguſtus.

To the Iſagoge of Alypius the preface is but very ſhort, but in that to Gaudentius, which follows it next in order Meibomius cites a paſſage from Caſſiodorus, a Latin writer on muſic, who flouriſhed in the fifth century, and will preſently be ſpoken of, from whence he thinks the age when Alypius lived may in ſome meaſure be learned. He obſerves alſo that it appears from the ſame paſſage of Caſſiodorus that Gaudentius had been tranſlated into Latin by a Roman, a friend of his, named Mutianus *; the whole paſſage, to give it together as it ſtands in Caſſiodorus, is in theſe words: 'Gratiſſima ergo 'nimis utiliſque cognitio, quæ et ſenſum noſtrum ad ſuperna erigit, 'et aures modulatione permulcet: quam apud Græcos Alypius, Eu-'clydes, Ptolomæus, et cæteri probabili inſtitutione docuerunt. 'Apud Latinos autem vir magnificus Albinus librum de hac re, com-'pendio, ſub brevitate conſcripſit, quem in bibliotheca Romæ non 'habuiſſe atque ſtudioſè legiſſe retinemus. Qui ſi forte gentili in-'curſione ſublatus eſt, habetis hic Gaudentium Mutiani Latinum: 'quem ſi ſolicita intenſione legitis, hujus ſcientiæ vobis atria pate-'facit. Fertur etiam latio ſermone et Apuleium Madaurenſem inſti-'tuta hujus operis efficiſſe, ſcripſit etiam et pater Auguſtinus de 'Muſica ſex libros, in quibus humanam vocem, rhythmicos ſonos, et

* Mutianus alſo tranſlated the Homilies of St. Chryſoſtom. Fabr. Biblioth. Græc. lib. III. cap. x.

'harmoniam modulabilem in longis ſyllabis atque brevibus natura-
'liter habere monſtravit. Cenſorinus quoque de accentibus voci
'noſtræ ad neceſſariis ſubtiliter diſputavit, pertinere dicens ad muſi-
'cam diſciplinam: quem vobis inter cæteros tranſcriptum reliqui.'
Caſſiod. de Muſica.

Gaudentius is publiſhed from a manuſcript, which the editor procured of his friends Selden and Langbaine, who collated it for him, with two others which had been preſented to the Bodleian library, the one by Sir Henry Savil, and the other by William earl of Pembroke, formerly chancellor of the univerſity of Oxford. It ſeems that our countryman Chilmead had undertaken to publiſh an edition of Gaudentius, but being informed that Meibomius had entertained a deſign of giving it to the world, he generouſly ſent him his papers, and remitted the care of publiſhing them to him.

Bacchius Senior was firſt publiſhed in the original Greek, and with a French tranſlation by Merſennus, in a commentary on certain chapters in the book of Geneſis, written by him to explain the muſic of the ancient Hebrews and Greeks, intitled 'Queſtiones et Expli-
'catio in ſex priora capita Geneſeos, quibus etiam Græcorum et He-
'bræorum Muſica inſtauratur.' Of this tranſlation Meibomius, in his general preface, ſpeaks in very ſevere terms; he ſays he did not know that any ſuch was extant, till he was informed thereof by his friend Iſmael Bullialdus; he ſays that he then had it brought to him from Paris by the courier, and that if he had ſeen it before he had publiſhed his notes on that author, they would have been made much fuller by obſervations on his errors. However the only error that Meibomius here charges Merſennus with, is that of having confounded the Stantes with the Mobiles in his repreſentation of the Syſtema maxima.

Ariſtides Quintilianus is taken from a manuſcript which Meibomius frequently mentions as belonging to Joſeph Scaliger, in which was contained Alypius, Nicomachus, Ariſtoxenus, Ariſtides, and Bacchius. This manuſcript was depoſited in the library of Leyden, and communicated to him by Daniel Heinſius, together with two manuſcripts of Martianus Capella.

With the aſſiſtance of the ſeveral manuſcripts above mentioned, and a correſpondence with the moſt learned men of his time, namely, Selden, Langbaine, Salmaſius, Leo Allatius, and many others,

Meibomius

Meibomius completed his edition of the ancient muſical authors, and publiſhed it at Amſterdam in the year 1652, with a dedication to Chriſtina queen of Sweden.

With reſpect to the other Greek writers, namely, Ptolemy, Manuel Bryennius, and Porphyry, the former of theſe was publiſhed, together with Porphyry's Commentary, by Antonius Gogavinus, at Venice, with a Latin verſion in 1562, but, as it ſhould ſeem from Dr. Wallis's cenſure of it, in a very inaccurate manner: Meibomius ſomewhere ſays that he had intended to publiſh both Porphyry and Manuel Bryennius, but he not having done it, Dr. Wallis undertook it, and has given it to the world in the third volume of his works. Moſt of the manuſcripts that were made uſe of for the above publications, had been carried to Conſtantinople upon the erection of the eaſtern empire, to preſerve them from the ravages of the northern invaders: and as that city continued to be the ſeat of learning for ſome centuries, they, together with an immenſe collection of Greek and Latin manuſcripts, containing the works of the moſt valuable of the Greek and Roman writers, were preſerved there with great care. But the taking and ſacking of Conſtantinople by the Turks, in the year 1452, was followed by an emigration of learning and learned men, who, eſcaping from the deſtruction that threatened them, ſettled chiefly in Italy, and became the revivers of literature in the weſtern parts of Europe.

Theſe men upon their removal from Conſtantinople brought with them into Italy an immenſe treaſure of learning, conſiſting of ancient manuſcripts in all the ſeveral branches thereof, which they diſſeminated by lectures in the public ſchools: many of theſe manuſcripts have at different periods been printed and diſperſed throughout Europe, and others of them remain unpubliſhed, either in public libraries, or in the collections of princes and other great perſons *.

Theſe men are alſo ſaid to have introduced into Italy the knowledge of ancient muſic, which they could no otherwiſe do than by public lectures, and by giving to the world copies of the ſeveral treatiſes of the Greek harmonicians, hereinbefore particularly men-

* The manuſcripts relating to muſic which Kircher procured acceſs to for the purpoſe of compiling his Muſurgia, are by him ſaid to be extant in the library of the Roman College; and he ſpeaks of one huge tome in particular, in which he ſays are the ſeveral works of Ariſtides Quintilianus, Bryennius, Plutarch, Ariſtotle, Callimachus, Ariſtoxenus, Alypius, Ptolemy, Euclid, Nicomachus, Boetius, Martianus Capella, Valla, and ſome others.

tioned; and the effects of these their labours to cultivate that kind of knowledge were made apparent by Gaffurius, or Franchinus, as he is otherwise called, who, before the end of the fifteenth century, published those several works of his, which have justly entitled him to the appellation of the Father of Music among the moderns.

Before the migration of learning from the East, all that was known of the ancient music in the western parts of Europe was contained in the writings of Censorinus, Macrobius, Martianus Capella, Boetius, Cassiodorus, and a few other Latin writers, who, as Meibomius says of Capella, might very justly be termed Pedarians, inasmuch as they were strict followers of the ancient harmonicians; or else in the works of a very learned and excellent man, to whom this censure cannot be extended, namely, Boetius, of whom, and of whose inestimable work De Musica a very particular account will shortly be given; in the interim it will be necessary to mention some innovations that had been made in music subsequent to Ptolemy, and before Boetius, of whom we are about to speak; and first it is to be noted that in this interval, if not before the commencement of it, the genera, at least in practice, were reduced to one, namely, the diatonic: and next it is to be remarked, that the method of notation used by the ancients, the explanation whereof is almost the sole purpose of Alypius's book, was totally changed by the Romans, who to the great system, which consisted, as has been shewn, of a bisdiapason, containing fifteen sounds, applied as many letters of their own alphabet; so that assigning to Proslambanomenos the letter A, the system terminated at P. It does not appear that at this time, nor indeed till a long time after, any marks or characters had been invented to denote the length or duration of musical sounds; nor, notwithstanding all that has been said about the rhythmus of the ancients, does it in the least appear that they had any rule for determining the length of the sounds, other than that which constituted the

In the account ~~of the~~ late discoveries in the ruins of Herculaneum, given by the abbé Winckelman, mention is made of an ancient Greek treatise on music found there, written by one Philodemus, an author who has escaped the researches of the industrious Fabricius. Nevertheless, a philosopher of that name occurs amongst the Locrians, in Stanley's list of the Pythagorean school. Hist. of Philosophy, Pythagoras, chap. xxiv. This manuscript the antiquaries employed by the king of Naples, though it is burned to a crust, have begun to unroll; but the condition of it, and the nature of the process made use of for developing it, render it almost impossible that the world can ever be the better for its contents. See the Letter of the Abbé Winckelman to Count Bruhl on this subject.

measure

meaſure of the verſes * to which thoſe ſounds were ſeverally applied; which conſideration leaves it in ſome ſort a queſtion whether among the ancients there was any ſuch thing as merely inſtrumental muſic.

In this method of notation by the firſt fifteen letters of the Latin alphabet, a modern will diſcover a great defect; for, being in a lineal poſition, they by their ſituation inferred no diverſity between grave and acute, whereas in the ſtave of the moderns the characters by a judicious analogy are made to expreſs, according to their different ſituations in the ſtave, all the differences of acute and grave from one extremity of the ſyſtem to the other.

ANITIUS MANLIUS TORQUATUS SEVERINUS BOETIUS, was the moſt conſiderable of all the Latin writers on muſic; indeed his treatiſe on the ſubject ſupplied for ſome centuries the want of thoſe Greek manuſcripts which were ſuppoſed to have been loſt; for this reaſon, as alſo on account of his ſuperior eminence in literature, he merits to be very particularly ſpoken of. He was by birth a Roman, deſcended of an ancient family, many of whom had been ſenators, and ſome advanced to the dignity of the conſulate: the time of his birth is related to have been about that period in the Roman hiſtory when Auguſtulus, whoſe fears had induced him to a reſignation of the empire, was baniſhed, and Odoacer king of the Herulians began to reign in Italy, viz. in the year of Chriſt 476, or ſomewhat after. The father of Boetius dying while he was yet an infant, his relations undertook the care of his education and the direction of his ſtudies; his excellent parts were ſoon diſcovered, and, as well to enrich his mind with the ſtudy of philoſophy, as to perfect himſelf in the Greek language, he was ſent to Athens. Returning young to Rome, he was ſoon diſtinguiſhed for his learning and virtue, and promoted to

* In the Chronology of Sir Iſaac Newton, pag. 14. is the following paſſage. 'In 'the year 1035 [before Chriſt] the Idæi Dactyli [a people ſuppoſed to have come from 'Numidia, vide Heyl. Coſm. pag. 555. edit. 1703] find out iron in mount Ida in Crete, 'and work it into armour and iron tools, and thereby give a beginning to the trades of 'ſmiths and armourers in Europe; and by ſinging and dancing in their armour, and 'keeping time by ſtriking upon one another's armours with their ſwords, they bring in 'muſic and poetry, and at the ſame time they nurſe up the Cretan Jupiter in a cave of 'the ſame mountain, dancing about him in their armour.'

The origin of metrical numbers, and of the rhythmus, as is called, is by ſome referred to this event; but admitting this as a fact, it does not aſcertain the time when the characters declaring the length or duration of ſounds were firſt invented; and the truth is that theſe are, comparatively ſpeaking, a modern improvement in muſic.

the

the principal dignities in the ſtate, and at length to the conſulate. Living in great affluence and ſplendour, he addicted himſelf to the ſtudy of theology, mathematics, ethics, and logic; and how great a maſter he became in each of theſe branches of learning appears from thoſe works of his now extant. The great offices which he bore in the ſtate, and his conſummate wiſdom and inflexible integrity, procured him ſuch a ſhare in the public councils, as proved in the end his deſtruction; for as he ever employed his intereſt in the king for the protection and encouragement of deſerving men, ſo he exerted his utmoſt efforts in the detection of fraud, the repreſſing of violence, and the defence of the ſtate againſt invaders. At this time Theodoric the Goth had attempted to ravage the Campania; and it was owing to the vigilance and reſolution of Boetius that that country was preſerved from deſtruction. At length, having murdered Odoacer, Theodoric became king of Italy, where he governed thirty-three years with prudence and moderation, during which time Boetius poſſeſſed a large ſhare of his eſteem and confidence. It happened about this time that Juſtin, the emperor of the Eaſt, upon his ſucceeding to Anaſtaſius, made an edict condemning all the Arians, except the Goths, to perpetual baniſhment from the eaſtern empire; in this edict Hormiſda biſhop of Rome, and alſo the ſenate concurred; but Theodoric, who, as being a Goth, was an Arian, was extremely troubled at it, and conceived an averſion againſt the ſenate for the ſhare they had borne in this proſcription. Of this diſpoſition in the king, three men of profligate lives and deſperate fortunes, Gaudentius, Opilio, and Baſilius, took advantage; for having entertained a ſecret deſire of revenge againſt Boetius, for having been inſtrumental in the diſmiſſion of the latter from a lucrative employment under the king, they accuſed him of ſeveral crimes, ſuch as the ſtifling a charge, the end whereof was to involve the whole ſenate in the guilt of treaſon; and an attempt, by dethroning the king, to reſtore the liberty of Italy; and, laſtly, they ſuggeſted that, to acquire the honours he was in poſſeſſion of, Boetius had had recourſe to magical arts.

Boetius was at this time at a great diſtance from Rome; however Theodoric tranſmitted the complaint to the ſenate, enforcing it with a ſuggeſtion that the ſafety, as well of the people as the prince, was rendered very precarious by this ſuppoſed deſign to exterminate the Goths: the ſenate perhaps fearing the reſentment of the king, and

having nothing to hope from the ſucceſs of an enterprize, which, ſuppoſing it ever to have been meditated, was now rendered abortive, without ſummoning him to his defence, condemned Boetius to death. The king however, apprehending ſome bad conſequence from the execution of a ſentence ſo flagrantly unjuſt, mitigated it to baniſhment. The place of his exile was Ticinum, now the city of Pavia, in Italy: being in that place ſeparated from his relations, who had not been permitted to follow him into his retirement, he endeavoured to derive from philoſophy thoſe comforts which that alone was capable of affording to one in his forlorn ſituation, ſequeſtered from his friends, in the power of his enemies, and at the mercy of a capricious tyrant; and accordingly he there compoſed that valuable diſcourſe, entitled De Conſolatione Philoſophiæ. To give a more particular account of this book would be needleſs, it being well known in the learned world: one remarkable circumſtance relatingto it is, that, by thoſe under affliction it has in various times been applied to, as the means of fortifying their minds and reconciling them to the diſpenſations of Providence, almoſt as conſtantly as the ſcriptures themſelves. Our Saxon king Alfred, whoſe reign, though happy upon the whole, was attended with great viciſſitudes of fortune, had recourſe to this book of Boetius, at a time when his diſtreſſes compelled him to ſeek retirement; and, that he might the better impreſs upon his mind the noble ſentiments inculcated in it, he made a complete tranſlation of it into the Saxon language, which, within theſe few years, has been given to the world in its proper character: Chaucer made a tranſlation of it into Engliſh, which is printed among his works, and is alluded to in theſe verſes of his:

Adam Scrivener, yf ever it the befalle
Boece or Troiles for to write newe,
Under thy longe lockes thou muſt have the ſcalle:
But after my makynge thou write more true;
So ofte a daye I mote thy werke renewe,
It to correcte, and eke to rubbe and ſcrape,
And al is thorow thy negligence and rape.

And Camden relates, that queen Elizabeth, during the time of her confinement by her ſiſter Mary, to mitigate her grief, red and afterwards tranſlated it into very elegant Engliſh.

It

It is more than probable that Boetius would have ended his exile by a natural death, had it not been for an event that happened about two years after the pronouncing his ſentence; for, in the year 524, Juſtin, the emperor, thought fit to promulgate an edict againſt the Arians, whereby he commanded, without excepting the Goths, as he had done lately, on another occaſion, that all biſhops who maintained that hereſy ſhould be depoſed, and their churches conſecrated after the true Chriſtian form. To avert this decree, Theodoric ſent an embaſſy to the emperor, which, to render it the more ſplendid and reſpectable, conſiſted of the biſhop or pope himſelf, who at that time was John the Second, the immediate ſucceſſor of Hormiſda, and four others, of the conſular and patrician orders, who were inſtructed to ſolicit with the emperor the repeal of this decree, with threats, in caſe of a refuſal, that the king would deſtroy Italy with fire and ſword. Upon the arrival of the ambaſſadors at Conſtantinople, the emperor very artfully contrived to receive them in ſuch a manner as naturally tended to detach them from their maſter, and make them ſlight the buſineſs they were ſent to negociate, and he ſucceeded accordingly; for as ſoon as they approached the city, the emperor, the clergy, and a great number of the people, went in proceſſion to meet them. In their way to the church, the upper hand of the emperor was given to the biſhop; and upon their arrival there, the holy father, to ſhew his gratitude for the honour done him of ſitting on the right of the imperial throne, celebrated the day of the Reſurrection after the Roman uſe, and crowned Juſtin emperor. Of the inſufferable pride and arrogance of this John ſo many inſtances are related, that no one who reads them can lament the fate which afterwards befel him, viz. that he died in a dungeon. It is recorded, that upon his arrival at Corinth, in his way to Conſtantinople, great enquiry was made for a gentle horſe for him to ride on; upon which, a nobleman of that city ſent him one that, for the goodneſs of its temper, had been reſerved for the uſe of his lady; the biſhop accepted the favour, and, after travelling as far as he thought fit, returned the beaſt to the owner: but behold what followed, the ſagacious animal, conſcious of the merit of having once borne the ſucceſſor of St. Peter, refuſed ever after to let the lady mount him; upon which the huſband ſent him again to the pope, with a requeſt that he would accept of that which was no longer of any uſe

to

to the owner. This event, it is to be noted, is recorded as a miracle; but if we allow it the credit due to one, it will reflect but little honour on the worker of it, ſince the utmoſt it proves is, that the pope had the power of communicating to a horſe a quality which had rendered the primitive poſſeſſor of it to the laſt degree odious.

It is not eaſy to ſee how, with any degree of propriety, or conſiſtent with juſtice, the miſbehaviour of the ambaſſadors could be imputed to Boetius, who, all this while, was confined to the place of his exile, and ſeemed to be employing his time in a way much more ſuited to his circumſtances and character than in the abetting the miſguided and malevolent zeal of either of two enthuſiaſtic princes; nevertheleſs, we are told, that Theodoric no ſooner heard of the behaviour of John and his colleagues, than he began to meditate the death of Boetius: he however ſuppreſſed his reſentment, till he had received a formal complaint from his people of the infidelity of thoſe entruſted by him. Immediately on his arrival, he committed the biſhop to cloſe confinement, wherein he ſhortly after ended his days. Had his revenge ſtopped here, his conduct might have eſcaped cenſure, but he completed the ruin of his character by ſentencing Boetius, to death, who, together with Symmachus, the father of his wife, was beheaded in priſon on the tenth of the kalends of November, 705. In order to palliate the cruelty of the king, it has been inſinuated, that the treachery of his ambaſſadors was a kind of evidence that the conſpiracy had a foundation in truth; and that fact once eſtabliſhed, the intimacy which had ſubſiſted for ſeveral years between Boetius and the biſhop, before the baniſhment of the former, furniſhed a ground for ſuſpicion that he was at leaſt not ignorant of it. It is farther ſaid, that, as if he believed the conſpiracy to be real, the king ſent to Boetius, in priſon, offers of pardon, if he would diſcloſe the whole treaſon; but the proteſtations which he made upon that occaſion of his innocence, afford the ſtrongeſt evidence that could be given that he was not privy to it.

But the cauſes of this ſevere reſolution of Theodoric are elſewhere to be ſought for: he was arrived at the age of ſeventy-two, and for ſome years had been infected with the vices uſually imputed to old age: he had reigned more than thirty-three years; and though the mildneſs and prudence of his government, and that paternal tenderneſs with which he had ruled his people, were greater than could be expected from a prince who had made his way to dominion by the mur-

der of the rightful ſovereign, the diſappointments he had met with, the inſults that had been offered him, one particularly in the perſon of his ſiſter, who had received ſome indignities from the African Vandals, the contempt that had been ſhewn him in this late embaſſy, and, above all, his utter inability to reſent theſe injuries in the way he moſt deſired, theſe misfortunes concurring, deprived him of that quanimity of temper which had been the characteriſtic of his reign: in ſhort, he grew jealous, timid, vindictive, and cruel; and after this, nothing he did was to be wondered at. But to return to Boetius.

The extenſive learning and eloquence of this great man are conſpicuous in his works; and his ſingular merits have been celebrated by the ableſt writers that have lived ſince the reſtoration of learning. His firſt wife, for he was twice married, was named Helpes, a Sicilian lady of great beauty and fortune, but more eminently diſtinguiſhed by the endowments of her mind, and her inviolable affection for ſo excellent a man. She had a genius for poetry, and wrote with a degree of judgment and correctneſs not common to her ſex. He deſired much to have iſſue by her; but ſhe dying young, he embalmed her memory in the following elegant verſes:

Helpes dicta fui, Siculæ regionis alumna,
Quam procùl à patria, conjugis egit amor.
Quo ſine, mœſta dies, nox anxia, flebilis hora
Nec ſolum caro, ſed ſpiritus unus erat.
Lux mea non clauſa eſt, tali remanente marito,
Majorique animæ, parte ſuperſtes ero.
Porticibus ſacris tam nunc peregrina quieſco,
Judicis eterni teſtificata thronum.

* Procopius relates that he was frighted to death; the following is his account of that ſtrange accident:

'Symmachus and his ſon-in-law, Boetius, juſt men and great relievers of the poor, 'ſenators and conſuls, had many enemies, by whoſe falſe accuſations Theodoric being 'perſuaded that they plotted againſt him, put them to death, and confiſcated their eſtates. 'Not long after, his waiters ſet before him at ſupper the head of a great fiſh, which ſeemed 'to him to be the head of Symmachus, lately murthered; and with his teeth ſticking out, 'and fierce glaring eyes, to threaten him. Being frighted, he grew chill, went to bed 'lamenting what he had done to Symmachus and Boetius, and ſoon after died.' De Bello Gothico, lib. I.

Ne

Ne qua manus buſtum violet, niſi fortè jugalis,
Hæc iterum cupiat jungere membra ſuis.
Ut Thalami cumuliq; comes, nec morte revellar,
Et ſocios vitæ nectat uterque cinis.

His other wife, Ruſticiana, was the daughter of Quintus Aurelius Menius Symmachus, a chief of the ſenate, and conſul in the year 485: with her he received a conſiderable acceſſion to his fortune. He had ſeveral children by her; two of whom arrived to the dignity of the conſulate. His conjugal tenderneſs was very exemplary; and it may be truly ſaid, that, for his public and private virtues, he was one of the great ornaments of that degenerate age in which it was his misfortune to be born.

The tomb of Boetius is to be ſeen in the church of St. Auguſtine, at Pavia, near the ſteps of the chancel, with the following epitaph:

Mœonia et Latia lingua clariſſimus, et qui
Conſul eram, hic perii, miſſus in exilium;
Et quia mors rapuit? Probitas me vexit ad auras,
Et nunc fama viget maxima vivit opus.

Many ages after his death the emperor Otho the Third encloſed his bones, then lying neglected amongſt the rubbiſh, in a marble cheſt; upon which occaſion Gerbert, an eminent ſcholar of that time, and who was afterwards advanced to the papal chair by the name of Sylveſter the Second, did honour to his memory in the following lines:

Roma potens, dum jura ſuo declarat in orbe,
Tu pater, et patriæ lumen, Severine Boeti,
Conſulis officio, rerum diſponis habenas,
Infundis lumen ſtudiis, et cedere neſcis
Græcorum ingeniis, ſed mens divina coercet
Imperium mundi. Gladio bacchante Gothorum
Libertas Romana perit: tu conſul et exul,
Inſignes titulos præclara morte relinquis,

Tunc decus Imperii, ſummas qui prægravat artes,
Tertius Otho ſua dignum te judicat aula;
Æternumque tui ſtatuit monumenta laboris,
Et bene promeritum, meritis exornat honeſtis.

The writings of Boetius, the titles whereof are given below*, ſeem to have been collected with great care: an edition of them was printed at Venice, in one volume in folio, 1499. In 1570, Glareanus, of Baſil, collated that with ſeveral manuſcripts, and publiſhed it, with a few various readings in the margin. To render his author more intelligible, the editor has inſerted ſundry diagrams of his own; but has been careful not to confound them with the original ones of Boetius.

But before theſe, or indeed the doctrines of Boetius, can be rendered intelligible, it is neceſſary firſt to ſtate the general drift and tendency of the author, in his treatiſe De Muſica; and next to explain the ſeveral terms made uſe of by him in the demonſtration of the proportions of the conſonances and other intervals, as alſo the proportions themſelves, diſtinguiſhing between the ſeveral ſpecies of arithmetical, geometrical, and harmonical proportion.

The deſign of Boetius in the above mentioned treatiſe was, by the aid of arithmetic, to demonſtrate thoſe ratios which thoſe of the Py-

* In Porphyrium à Victorino tranſlatum, lib. II. In Porphyrium à ſe Latinum factum, lib. V. In Prædicamenta Ariſtotelis, lib. IV. In librum de Interpretatione Commentaria minora, lib. II. In eundem de Interpretatione Commentaria majora, lib. VI. Analyticorum priorum Ariſtotelis, Anitio Manlio Severino Boethio interprete, lib. II. Analyticorum poſteriorum Ariſtotelis, Anitio Manlio Severino Boethio interprete, lib. II. Introductio ad categoricos Syllogiſmos, lib I. De Syllogiſmo categorico, lib. II. De Syllogiſmo hypothetico, lib. II. De Diviſione, lib. I. De Diffinitione, lib. I. Topicorum Ariſtotelis, Anitio Manlio Severino, interprete, lib. VIII. Elenchorum Sophiſticorum Ariſtotelis, Anitio Manlio Severino Boethio interprete, lib. II. In Topica Cironis, lib. VI. De Differentiis Topicis, lib. IV. De Conſolatione Philoſophiæ, luculentiſſimis Johannis Murmelli (partim etiam Rodolphi Agricolæ) Commentariis illuſtrati, lib. V. De Sancta Trinitate, cum Gilberti epiſopi Pictavienſis, cognemento porretæ doctiſſimi olim viri commentariis, jam primum ex vetuſtiſſimo ſcripto codice in lucem editis, lib. IV. Quorum primus continet excellentem & piam doctrinam, de Trinitate & Unitate Dei: quomodo Trinitas ſit Unus Deus, & non Tres Dii, lib. I. Secundus tractat Queſtionem An Pater, & Filius, & Spiritus Sanctus ſubſtantialiter prædicentur, lib. I. Tertius complectitur Hebdomaden: An omne quod ſit, bonum ſit, lib. I. Quartus evidenter & piè docet, in Chriſto duas eſſe Naturas, & unam Perſonam, adverſus Eutychen & Neſtorium, lib. I. De Unitate & Uno, lib. I. De Diſciplina Scholarium, lib. I. De Arithtica, lib. II. De Muſica, lib. V. De Geometria, lib. II.

thagorean

thagorean ſchool had aſſerted ſubſiſted between the conſonances. Theſe ratios are either of equality, as 1 : 1, 2 : 2, 8 : 8, or of inequality, as 4 : 2, becauſe the firſt contains the latter once, with a remainder: and of theſe ratios, or proportions of inequality, there are five kinds, as, namely, multiplex, ſuperparticular, ſuperpartient, multiplex ſuperparticular, and multiplex ſuperpartient; all which will hereafter be explained. Theſe terms are made uſe of by Euclid, and others of the Greek writers, and were adopted by Boetius, and through him have been continued down to the Italian writers, in whoſe works they are perpetually occurring; and though the modern arithmeticians have rejected them, and ſubſtituted in their places, as a much ſhorter and more intelligible method of deſignation, the numbers that conſtitute the ſeveral proportions, it is neceſſary to the underſtanding of the ancient writers, that the terms uſed by them ſhould alſo be underſtood.

Another thing neceſſary to be known, in order to the underſtanding not only of Boetius and his followers, but all who have written on thoſe abſtruſe parts of muſic the ancient modes, the eccleſiaſtical tones, and their diviſions into authentic and plagal, is the nature of the three different kinds of proportion, namely, arithmetical, geometrical, and harmonical; an explanation whereof, as alſo of the ſeveral kinds of proportion of inequality can hardly be given in terms more accurate, preciſe, and inrelligible, than thoſe of Dr. Holder, in his treatiſe on the Natural Grounds and Principles of Harmony, chap. v. wherein, after premiſing that all harmonic bodies and ſounds fall under numerical calculations, he ſpeaks thus of proportion in general:

'We may compare (i. e. amongſt themſelves) either (1) magni-
'tudes (ſo they be of the ſame kind); or (2) the gravitations, mo-
'tions, velocities, durations, ſounds, &c. from thence ariſing; or, far-
'ther, the numbers themſelves, by which the things compared are
'explicated; and if theſe ſhall be unequal, we may then conſider
'either, firſt, how much one of them exceeds the other; or, ſe-
'condly, after what manner one of them ſtands related to the other,
'as to the quotient of the antecedent (or former term) divided by the
'conſequent (or latter term) which quotient doth expound, denomi-
'nate, or ſhew, how many times, or how much of a time or times, one
'of them doth contain the other: and this by the Greeks is called

'λόγος,

'λόγος, ratio, as they are wont to call the similitude or equality of 'ratios ἀναλογία, analogie, proportion, or proportionality; but custom, 'and the sense assisting, will render any over-curious application of 'these terms unnecessary.'

From these two considerations last mentioned, the same author says, there are wont to be deduced three sorts of proportion, arithmetical, geometrical, and a mixed proportion, resulting from these two, called harmonical. These are thus explained by him:

'1. Arithmetical, when three or more numbers in progression 'have the same difference; as 2, 4, 6, 8, &c. or discontinued, as '2, 4, 6; 14, 16, 18.'

'2. Geometrical, when three or more numbers have the same 'ration, as 2, 4, 8, 16, 32; or discontinued, as 2, 4; 64, 128.'

'Lastly, Harmonical, (partaking of both the other) when three 'numbers are so ordered, that there be the same ration of the greatest 'to the least, as there is of the difference of the two greater to the 'difference of the two less numbers, as in these three terms, 3, 4, 6, 'the ration of 6 to 3, (being the greatest and least terms) is duple; so 'is 2, the difference of 6 and 4 (the two greater numbers) to 1, the 'difference of 4 and 3 (the two less numbers) duple also. This is 'proportion harmonical, which diapason, 6 to 3, bears to diapente, '6 to 4, and diatessaron, 4 to 3, as its mean proportionals.'

'Now for the kinds of rations most properly so called; i. e. geo-'metrical: first observe, that in all rations, the former term or 'number, (whether greater or less) is always called the antecedent; 'and the other following number, is called the consequent. If there-'fore, the antecedent be the greater term, then the ration is either 'multiplex, superparticular, superpartient, or (what is compounded 'of these) multiplex superparticular, or muliplex superpartient.'

'1. Multiplex; as duple, 4 to 2; triple, 6 to 2; quadruple, '8 to 2.'

'2. Superparticular; as 3 to 2, 4 to 3, 5 to 4; exceeding but by 'one aliquot part, and in their radical, or least numbers, always 'but by one; and these rations are termed sesquialtera, sesquitertia, '(or supertertia) sesquiquarta, (or superquarta) &c. Note, that num-'bers exceeding more than by one, and but by one aliquot part, may 'yet be superparticular, if they be not expressed in their radical, i. e.

'least

'leaſt numbers, as 12 to 8, hath the ſame ration as 3 to 2; i. e. 'ſuperparticular; though it ſeem not ſo till it be reduced by the 'greateſt common diviſor to its radical numbers, 3 to 2. And the 'common diviſor, (i. e. the number by which both the terms may 'ſeverally be divided) is often the difference between the two 'numbers; as in 12 to 8, the difference is 4, which is the common 'diviſor. Divide 12 by 4, the quotient is 3; divide 8 by 4, the 'quotient is 2; ſo the radical is 3 to 2. Thus alſo, 15 to 10, divided 'by the difference, 5, gives 3 to 2; yet in 16 to 10, 2 is the common 'diviſor, and gives 8 to 5, being ſuperpartient. But in all ſuper-'particular rations, whoſe terms are thus made larger by being 'multiplied, the difference between the terms is always the greateſt 'common diviſor; as in the foregoing examples.'

'The third kind of ration is ſuperpartient, exceeding by more than 'one as 5 to 3; which is called ſuperbipartiens tertias, (or tria) 'containing 3 and $\frac{2}{3}$ 8 to 5, ſupertripartiens quintas, 5 and $\frac{3}{5}$.'

'The fourth is multiplex ſuperparticular, as 9 to 4, which is du-'ple, and ſeſquiquarta; 13 to 4, which is triple and ſeſquiquarta.'

'The fifth and laſt is multiplex ſuperpartient, as 11 to 4; duple, 'and ſupertripartiens quartas *.'

'When the antecedent is leſs than the conſequent, viz. when a 'leſs is compared to a greater; then the ſame terms ſerve to expreſs 'the rations, only prefixing ſub to them; as, ſubmultiplex, ſubſuper-'particular, (or ſubparticular) ſubſuperpartient, (or ſubpartient) &c. '4 to 2 is duple; 2 to 4 is ſubduple, 4 to 3 is ſeſquitertia; 3 to 4 is 'ſubſeſquitertia, 5 to 3 is ſuperbipartiens tertias; 3 to 5 is ſubſuper-'bipartiens tertias, &c.'

The ſame author proceeds to find how the habitudes of rations are found in theſe words:

'All the habitudes of rations to each other, are found by multipli-'cation or diviſion of their terms, by which any ration is added to or 'ſubtracted from another; and there may be uſe of progreſſion of 'rations or proportions, and of finding a medium, or mediety, be-

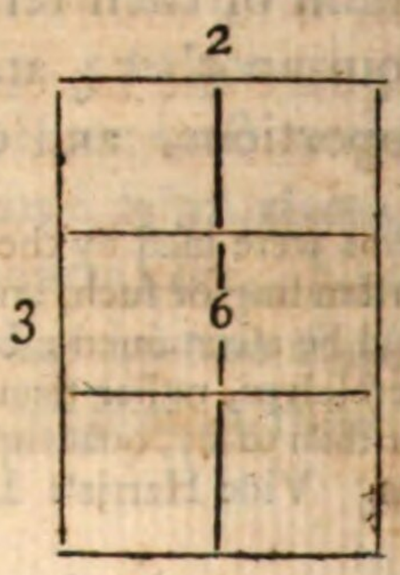
* The above terms were uſed by the ancient geometers and arithmeticians; and therefore, for the underſtanding of ſuch, and of Boetius in particular, it is very neceſſary that their meaning ſhould be aſcertained: but the manner now is to expreſs the proportions by the numbers themſelves, rather than by the terms; and briefly to ſay, as 31 is to 7, or as 7 is to 31, rather than to ſay, quadrupla ſuperbipartiens ſeptimas, or ſubquadrupla ſupertri partiens ſeptimas. Vide Harris's Lex. Tech. vol I. PROPORTION.

'tween the terms of any ration; but the main work is done by addition and ſubtraction of rations, which, though they are not performed like addition and ſubtraction of ſimple numbers in arithmetic, but upon algebraic grounds, yet the praxis is moſt eaſy.'

'One ration is added to another ration, by multiplying the two antecedent terms together, i. e. the antecedent of one of the rations, by the antecedent of the other. (For the more eaſe, they ſhould be reduced into their leaſt numbers or terms); and then the two conſequent terms, in like manner. The ration of the product of the antecedents to that of the product of the conſequents, is equal to the other two, added or joined together. Thus, for example, add the ration of 8 to 6; i. e. (in radical numbers) 4 to 3, to the ratio of 12 to 10, i. e. 6 to 5; the product will be 24 and 15, i. e. 8 to 5; you may ſet them thus, and multiply 4 by 6, they make 24; which ſet at the bottom; then multiply 3 by 5, they make 15; which likewiſe ſet under, and you have 24 to 15: which is a ration compounded of the other two, and equal to them both. Reduce theſe products, 24 and 15, to their leaſt radical numbers, which is by dividing as far as you can find a common diviſor to them both (which is here done by 3), and that brings them to the ration of 8 to 5. By this you ſee that a third minor, 6 to 5, added to a fourth, 4 to 3, makes a ſixth minor, 8 to 5. If more rations are to be added, ſet them all under each other, and multiply the firſt antecedent by the ſecond, and that product by the third; and again that product by the fourth, and ſo on; and in like manner the conſequents.'

4—	—3
6—	—5
24	15

'This operation depends upon the fifth propoſition of the eighth book of Euclid; where he ſhews that the ration of plain numbers is compounded of their ſides. See theſe diagrams.'



'Now

'Now compound theſe ſides. Take for the antecedents, 4, the 'greater ſide of the greater plane, and 3, the greater ſide of the leſs 'plane, and they multiplied give 12. Then take the remaining two 'numbers, 3 and 2, being the leſs ſides of the planes (for conſequents), 'and they give 6. So the ſides of 4 and 3, and of 3 and 2, com-'pounded (by multiplying the antecedent terms by themſelves and 'the conſequents by themſelves) make 12 to 6; i. e. 2 to 1, which 'being applied, amounts to this; ratio ſeſquialtera 3 to 2, added to 'ration ſeſquitertia 4 to 3, makes duple ration, 2 to 1. There-'fore, diapente added to diateſſeron, makes diapaſon.'

'Subtraction of one ration from another greater, is performed in 'like manner, by multiplying the terms; but this is done not late-'rally, as in addition, but croſſwiſe; by multiplying the antecedent 'of the former (i. e. of the greater) by the conſequent of the latter, 'which produceth a new antecedent; and the conſequent of the 'former by the antecedent of the latter, which gives a new conſe-'quent; and therefore, it is uſually done by an oblique 'decuſſation of the lines. For example, if you would take 'X 6 to 5 out of 4 to 3, you may ſet them down thus: 'Then 4, multiplied by 5, makes 20; and 3, by 6, gives '18; ſo 20 to 18, i. e. 10 to 9, is the remainder. That 'is, ſubtract a third minor out of a fourth, and there will 'remain a tone minor.

4 3
6 5
20 18
10 9

'Multiplication of rations is the ſame with their addition; only 'it is not wont to be of divers rations, but of the ſame, being taken 'twice, thrice, or oftener, as you pleaſe. And as before, in addition, 'you added divers rations, by multiplying them; ſo here, in multi-'plication, you add the ſame ration to itſelf, after the ſame manner, 'viz. by multiplying the terms of the ſame ratio by themſelves; 'i. e. the antecedent by itſelf, and the conſequent by itſelf, (which 'in other words, is to multiply the ſame by 2) and will in the ope-'ration be to ſquare the ration firſt propounded (or give the ſecond 'ordinal power; the ration firſt given being the firſt power or ſide) 'and to this product, if the ſimple ration ſhall again be added, (after 'the ſame manner as before) the aggregate will be the triple of the 'ration firſt given; or the product of that ration, multiplied by 3, 'viz. the cube, or third ordinal power. Its biquadrate, or fourth

'power, proceeds from multiplying it by 4; and ſo ſucceſſively in 'order, as far as you pleaſe you may advance the powers. For in-'ſtance, the duple ration, 2 to 1, being added to itſelf, dupled or 'multiplied by 2, produceth 4 to 1, (the ration quadruple); and if 'to this, the firſt again be added, (which is equivalent to multiply-'ing that ſaid firſt by 3), there will ariſe the ration octuple, or '8 to 1. Whence the ration, 2 to 1, being taken for a root, its du-'ple, 4 to 1, will be the ſquare; its triple, 8 to 1, the cube thereof, '&c. as hath been ſaid above. And to uſe another inſtance; to du-'ple the ration of 3 to 2, it muſt be thus ſquared: 3 by 3 gives 9; '2 by 2 gives 4, ſo the duple or ſquare of 3 to 2 is 9 to 4. Again, '9 by 3 is 27, and 4 by 2 is 8; ſo the cubic ration of 3 to 2 is 27 to 8. 'Again, to find the fourth power or biquadrate, (i. e. ſquared ſquare,) '27 by 3 is 81, 8 by 2 is 16; ſo 81 to 16 is the ration of 3 to 2 'quadrupled; as it is dupled by the ſquare, tripled by the cube, &c. 'To apply this inſtance to our preſent purpoſe, 3 to 2 is the ration of 'diapente, or a fifth in harmony; 9 to 4 is the ratio of twice dia-'pente, (or a ninth, viz. diapaſon, with tone major;) 27 to 8 is the 'ration of thrice diapente, or three fifths, which is diapaſon, with 'ſixth major, viz. 13 major; the ration of 81 to 16 makes four 'fifths, i. e. diſdiapaſon, with two tones major, i. e. a ſeventeenth 'major, and a comma of 81 to 80.'

'To divide any ration, the contrary way muſt be taken; and by 'extracting of theſe roots reſpectively, diviſion by their indices will 'be performed. E. gr. to divide it by 2, is to take the ſquare root 'of it; by 3, the cube root; by 4, the biquadratic, &c. Thus, to 'divide 9 to 4 by 2, the ſquare root of 9 is 3, the ſquare root of 4 is '2; then 3 to 2 is a ration juſt half ſo much as 9 to 4.'

CHAP. VI.

THE nature of proportion being thus explained, without a competent knowledge whereof it would be in vain to attempt the reading of Boetius, it remains to give ſuch an account of his

treatiſe De Muſica as is conſiſtent with a general hiſtory of the ſcience, and may be ſufficient to invite the ſtudious inquirer to an attentive peruſal of this moſt valuable work. Here therefore follow, in regular order, the titles of the ſeveral chapters contained in the five books of Boetius's treatiſe De Muſica, with an abridgment of ſuch of them as ſeem moſt worthy of remark.

Chap. i. Muſicam naturaliter nobis eſſe conjunctam, et mores vel honeſtare vel evertere.

Boetius in this chapter obſerves, that the ſenſitive power of perception is natural to all living creatures, but that knowledge is attained by contemplation. All mortals, he ſays, are endued with ſight, but whether the perception be effected by the coming of the object to the ſight, or by rays ſent forth to it, is a doubt. When any one, continues he, beholds a triangle or a ſquare, he readily acknowledges what he diſcovers by his eyes, but he muſt be a mathematician to inveſtigate the nature of a triangle or a ſquare. Having eſtabliſhed this propoſition, he applies it to the other liberal arts, and to muſic in particular; which he undertakes to ſhew is connected with morality, inaſmuch as it diſpoſes the mind to good or evil actions; to this purpoſe he expreſſes himſelf in theſe terms: 'The power or 'faculty of hearing enables us not only to form a judgment of 'ſounds, and to diſcover their differences, but to receive delight, if 'they are ſweet and adapted to each other; whence it comes to paſs 'that, as there are four mathematical ſciences *, the reſt labour at 'the inveſtigation of truth; but this, beſides that it requires ſpeculation, is connected with morality; for there is nothing that more 'peculiarly diſtinguiſhes human nature, than that diſpoſition obſervable in mankind to be one way affected by ſweet, and another 'by contrary ſounds; and this affection is not peculiar to particular 'tempers or certain ages, but is common to all; and infants, 'young, and even old men, are by a natural inſtinct rendered ſuſceptible of pleaſure or diſguſt from conſonant or diſcordant ſounds. 'From hence we may diſcern that it was not without reaſon that

* The four mathematical arts are arithmetic, geometry, muſic, and aſtronomy; theſe were anciently termed the quadrivium, or fourfold way to knowledge; the other three, grammar, rhetoric, and logic, completing the number of the ſeven liberal ſciences, were termed the trivium or threefold way to eloquence. Vide Du Cange, voce QUADRIVIUM.

This ſcholaſtic diviſion is recognized in an ancient monumental inſcription in Weſtminſter abbey, in memory of Gilbert Criſpin, who died abbot of Weſtminſter in 1117.

'Plato ſaid, that the ſoul of the world was conjoined with muſical 'proportion: and ſuch is the effect of muſic on the human man-'ners, that a laſcivious mind is delighted with laſcivious modes, and 'a ſober mind is more diſpoſed to ſobriety by thoſe of a contrary 'kind: and hence it is that the muſical modes, for inſtance the Ly-'dian and Phrygian, take their names from the tempers or diſtin-'guiſhing characteriſtics of thoſe nations that reſpectively delight in 'them: for it cannot be that things, in their nature ſoft, ſhould 'agree with ſuch as are harſh, or contrarywiſe; for it is ſimilitude 'that conciliates love; wherefore Plato held that the greateſt cau-'tion was to be taken not to ſuffer any change in a well-moraled 'muſic, there being no corruption of manners in a republic ſo great 'as that which follows a gradual declination from a prudent and 'modeſt muſic; for, whatever corruptions are made in muſic, the 'minds of the hearers will immediately ſuffer the ſame, it being 'certain that there is no way to the affections more open than that 'of the hearing: and theſe effects of muſic are diſcernible among 'different nations, for the more fierce, as the Getæ, are delighted 'with the harder modes, and the more gentle and civilized with 'ſuch as are moderate; although in theſe days few of the latter are 'to be found.'

Boetius then proceeds to relate that the Lacedæmonians, ſenſible of the great advantages reſulting to a ſtate from a ſober, modeſt, and well-regulated muſic, invited, by a great reward, Taletas the Cretan to ſettle among them, and inſtruct their youth in muſic. And he relates that the Spartans were ſo jealous of innovations in their muſic, that, for adding only a ſingle chord to thoſe he found, they baniſhed Timotheus from Sparta by a decree; which, however he could come by ſo great a curioſity, he gives in the original Greek, and is as follows:

Mitis eras juſtus prudens fortis moderatus
Doctus quadrivio nec minus in trivio.

Widmore's Hiſt. of Weſtminſter Abbey.

And theſe are the arts underſtood in the academical degrees of bachelor and maſter of arts, for the ancient courſe of ſcholaſtic inſtitution required a proficiency in each. The ſatire, as it is called, of Martianus Capella, De Nuptiis Philologiæ et Mercurii, is a treatiſe on the ſeven liberal ſciences: Caſſiodorus, who lived about half a century after him, wrote alſo De ſeptem Diſciplinis; and others of the learned in like manner have written profeſſedly on them all.

ΕΠΕΙ

ΕΠΕΙ ΔΕ ΤΙΜΟΘΕΟΣ Ο ΜΙΛΕΣΙΟΣ ΠΑΡΑΓΙΜΕΝΟΣ ΕΝ ΤΑΝ ΑΜΕΤΕΡΑΝ ΠΟΛΙΝ, ΤΑΝ ΠΑΛΑΙΑΝ ΜΟΛΠΗΝ ΑΤΙΜΑΣΑΣ. ΚΑΙ ΤΑΝ ΔΙΑ ΠΑΝ ΕΠΤΑ ΧΟΡΔΑΝ ΚΙΘΑΡΙΖΕΙ, ΑΠΟΣΤΡΕΦΟΜΕΝΟΣ ΠΟΛΥΦΩΝΙΑΝ ΕΙΣΑΓΩΝ, ΛΥΜΑΙΝΕΤΑΙ ΤΑΣ ΑΚΟΑΣ ΤΩΝ ΝΕΩΝ ΔΙΑ ΤΕ ΤΑΣ ΠΟΛΥΧΟΡΔΑΣ, ΚΑΙ ΤΑΣ ΚΑΙΝΟΤΑΤΑΣ ΤΟΥΤΩΝ ΜΕΛΕΟΣ ΑΓΕΝΝΕ ΚΑΙ ΠΟΙΚΙΛΑΝ ΑΝΤΙΑΠΛΟΑΝ, ΚΑΙ ΤΕΤΑΓΜΕΝΑΝ ΑΜΦΙΑΥΙΑΝ ΜΟΛΠΗΝ ΕΠΙ ΧΡΩΜΑΤΟΣ ΣΥΝΕΙΣΤΑΜΕΝ ΤΟΥΤΟΥ ΜΕΛΕΟΣ, ΔΙΑΣΤΑΣΙΝ. ΑΝΤΙ ΓΑΡ ΕΝΑΡΜΟΝΙΩ ΠΟΙΑΝ ΑΝΤΙΣΤΡΕΦΟΝ ΑΜΟΙΒΑΝ. ΠΑΡΑΚΑΛΑΘΕΙΣ ΔΕ ΕΝ ΤΟΝ ΑΓΩΝΑ ΤΑΣ ΕΛΕΥΣΙΝΙΑΣ ΔΑΜΑΤΡΟΣ ΑΙΧΟΣ ΔΙΕΦΗΜΙΣΑΤΟ ΤΑΝ ΤΩ ΜΥΘΩ ΚΙΔΗΣΙΝ: ΤΑΝ ΓΑΡ ΣΕΜΕΛΑ ΘΔΥΝΑΝ ΟΥΚ ΕΝΔΕΚΑΤΟΣ ΝΕΟΣ ΔΙΔΑΧΗΝ ΕΔΙΔΑΞΕ. ΕΙΤΑ ΠΕΡΙ ΤΟΥΤΩΝ ΤΟΝ ΒΑΣΙΔΕΑΝ ΚΑΙ ΤΟΥ ΡΗΤΟΡΟΣ ΜΕΜΨΑΤΑΙ ΤΙΜΟΘΕΟΝ, ΕΠΑΝΑΤΙΘΕΤΑΙ ΔΕ ΚΑΙ ΤΑΝ ΕΝΔΕΚΑ ΧΟΡΔΑΝ ΕΚΤΑΝΩΝ ΤΑΣ ΠΕΡΙΑΣΤΑΣ ΕΠΙΛΕΙΠΟΜΕΝΟΣ ΤΑΝ ΕΠΤΑΧΟΡΔΟΝ ΑΣΤΟΣ. ΤΟ ΓΑΡ ΠΟΛΙΟΣ ΒΑΡΟΣ ΑΠΤΟΝ ΤΕΤΑΡΒΗΤΑΙ ΕΣ ΤΑΝ ΣΠΑΡΤΑΝ ΕΠΙΦΕΡΕΙΝ: ΤΙΘΩΝ ΜΗ ΚΑΛΩΝ ΝΗΤΩΝ ΜΗΠΟΤΕ ΤΑΡΑΤΤΗΤΑΙ ΚΛΕΟΣ ΑΓΟΡΩΝ.

He then proceeds to declare the power of muſic in theſe words: ‘ It is well known that many wonderful effects have been wrought ‘ by the power of muſic over the mind; oftentimes a ſong has re- ‘ preſſed anger; and who is ignorant that a certain drunken young ‘ man of Taurominium being incited to violence by the ſound of the ‘ Phrygian mode, was by the ſinging of a ſpondeus appeaſed; for ‘ when a harlot was ſhut up in the houſe of his rival, and the young ‘ man, raging with madneſs, would have ſet the houſe on fire, Py- ‘ thagoras, who, agreeable to his nightly cuſtom, was employed in ‘ obſerving the motions of the celeſtial bodies, as ſoon as he was in- ‘ formed that the young man had been incited to this outrage by the ‘ Phrygian mode, and found that he would not deſiſt from his wick- ‘ ed attempt, though his friends repeated their admonitions to him ‘ for that purpoſe, ordered them to change the mode, and thereby ‘ attemperated the diſpoſition of the raging youth to a moſt tranquil ‘ ſtate of mind. Cicero relates the ſame ſtory in different words, but ‘ in nearly the ſame manner. “ When, (ſays he) certain drunken “ men, ſtirred up, as is often the caſe, by the ſound of the tibia, “ would have broke open the doors of a modeſt woman, Pythagoras “ is ſaid to have admoniſhed the tibiciniſt to play a ſpondeus, which “ he had no ſooner done than the luſtfulneſs of theſe men was ap- “ peaſed by the ſlowneſs of the mode and the gravity of the per- “ former.” But, to gather ſome ſimilar examples in few words, Ter- ‘ pander and Arion of Methymne, the next city in Leſbos to Mity- ‘ lene

'lene for grandeur, cured the Leſbians and Ionians of moſt grievous 'diſeaſes by the means of muſic; Hiſmenias, the Theban, by his 'muſic is reported to have freed from their torments divers Beotians, 'who were ſorely afflicted with ſciatic pains *. Empedocles alſo, 'when a certain perſon in a fury would have attacked his gueſt, for 'having accuſed and procured the condemnation of his father, is ſaid 'to have diverted him by a particular mode in muſic, and by that 'means to have appeaſed the anger of the young man. And ſo well 'was the power of muſic known to the ancient philoſophers, that 'the Pythagoreans, when they had a mind to refreſh themſelves by 'ſleep after the labours and cares of the day, made uſe of certain 'ſongs to procure them an eaſy and quiet reſt; and when they 'awaked they alſo diſpelled the dulneſs and confuſion occa-'ſioned by ſleep by others, knowing full well that the mind and 'the body were conjoined in a muſical fitneſs, and that whatever 'affects the body will alſo produce a ſimilar effect on the mind; 'which obſervation it is reported Democritus, whom his fellow-'citizens had confined, ſuppoſing him mad, made to Hippo-'crates the phyſician, who had been ſent for to cure him. To what 'purpoſe then are all theſe things? we cannot doubt but that our 'body and mind are in manner conſtituted in the ſame proportions 'by which harmonical modulations are joined and compacted, as 'the following argument ſhall ſhew; for hence it is that even in-'fants are delighted with a ſweet, or diſguſted with a harſh ſong: 'every age and either ſex are affected by muſic, and though they are 'different in their actions, yet do they agree in their love of muſic. 'Nay, ſuch as are under the influence of ſorrow, even modulate 'their complaints, which is chiefly the caſe with women, who by 'the ſweetneſs of their ſongs find means to alleviate their ſorrows †;

* There are many relations in hiſtory of the efficacy of muſic in the cure of bodily diſeaſes. It is reported that Thales the Cretan being by the advice of the Oracle called to Sparta, cured a raging peſtilence by the power of muſic alone. The aſſertion of Boetius with reſpect to the Sciatica ſeems to be founded on a paſſage in Aulus Gellius, lib. IV. chap. xiii. who reports that perſons afflicted with that diſeaſe were eaſed of their pains by certain gentle modulations of the tibia; and that by the ſame means many had been cured who had been bitten by ſerpents and other venemous creatures.

† Modern hiſtory furniſhes a curious fact to prove the truth of this obſervation; for it is related of the princeſs of Navarre, mother of Henry IV. of France, that at the inſtant when ſhe was delivered of him ſhe ſung a ſong in the Bearnois language. Life of Henry le Grand by the biſhop of Rodez.

'and

'and it was for this reaſon that the ancients had a cuſtom for the 'tibia to precede in their funeral proceſſions. Papinius Statius teſti-'fies as much in the following verſe.

'Cornu grave mugit adjunco,
'Tibia cui teneros ſuetum producere manes.

'And though a man cannot ſing ſweetly, yet while he ſings to 'himſelf he draws forth an innate ſweetneſs from his heart. Is it 'not manifeſt that the ſound of the trumpet fires the minds of the 'combatants, and impels them to battle; why then is it not proba-'ble that a perſon may be incited to fury and anger from a peaceful 'ſtate of mind? There is no doubt but that a mode may reſtrain 'anger or other inordinate deſires; for what is the reaſon that when 'a perſon receives into his ears any ſong with pleaſure, that he ſhould 'not alſo be ſpontaneouſly converted to it, or that the body ſhould 'not form or faſhion ſome motion ſimilar to what he hears: from all 'theſe things it is clear beyond doubt that muſic is naturally joined 'to us, and that if we would we cannot deprive ourſelves of it; 'wherefore the power of the mind is to be exerted, that what is 'implanted in us by nature ſhould alſo be comprehended by ſcience. 'For as in ſight it is not ſufficient for learned men barely to behold 'colours and forms, unleſs they alſo inveſtigate their properties; 'ſo alſo is it not ſufficient to be delighted with muſical ſongs, un-'leſs we alſo learn by what proportion of voices or ſounds they are 'joined together.'

Cap. ii. Tres eſſe muſicas, in quibus de vi muſicæ narratur.

The three kinds of muſic here meant are, mundane, humane, and inſtrumental; and of each of theſe mention has been made in a preceding page.

Cap. iii. De vocibus ac de muſicæ elementis.

Cap. iv. De ſpeciebus inequalitatis.

Cap. v. Quæ inequalitatis ſpecies conſonantiis aptentur.

Cap. vi. Cur multiplicitas, et ſuperparticularitas conſonantiis deputentur.

Cap. vii. Quæ proportiones quibus conſonantiis muſicis aptentur.

Cap. viii. Quid ſit ſonus, quid intervallum, quid concinentia.

Cap. ix. Non omne judicium dandum esse sensibus, sed amplius rationi esse credendum, in quo de sensuum fallacia.

It is the business of this chapter to shew, that though the first principles of harmony are taken from the sense of hearing, for this reason, that were it otherwise there could be no dispute about sounds; yet, in this case, the sense is not the sole arbiter. Boetius to this purpose expresses himself very rationally in the following terms: 'Hearing is as it were but a monitor, but the last perfection and 'power of judging about it depends upon reason. What need is 'there for many words to point out the error which the senses are 'liable to, since we know that neither is the same power of perception given to every one alike, nor is it always equal in the same 'man; on the other hand, it is vain to commit the examination of 'truth to an uncertain judgment. The Pythagoreans for this reason took as it were a middle way; for though they did not make 'the hearing the sole arbiter, yet did they search after and try some 'things by the ears only: they measured the consonants themselves 'by the ears, but the distances by which these consonants differed 'from each other they did not trust to the ears, the judgment where-'of is inaccurate, but committed them to the examination of reason, 'thereby making the sense subservient to reason, which acted as a 'judge and a master. For though the momenta of all arts, and of 'life itself, depend upon our senses, yet no sure judgment can be 'formed concerning them, no comprehension of the truth can 'exist, if the decision of reason be wanting; for the senses themselves 'are equally deceived in things that are very great or very little: and 'with respect of that of hearing, it with great difficulty perceives 'those intervals which are very small, and is deafened by those which 'are very great.'

Cap. x. Quemadmodum Pythagoras proportiones consonantiarum investigaverit.

Cap. xi. Quibus modis variè à Pythagora proportiones consonantiarum perpensæ sint.

The account delivered in the two preceding chapters, and which is mentioned in almost every treatise on the subject of music extant, is evidently taken from Nicomachus, whose relation of this supposed discovery of Pythagoras is herein before given at length.

Cap. xii. De divisione vocum, earumque explanatione.

Cap.

Cap. xiii. Quod infinitatem vocum humana natura finierit.
Cap. xiv. Quis ſit modus audiendi.
Cap. xv. De ordine theorematum, id eſt ſpeculationum.
Cap. xvi. De conſonantiis proportionum, et tono et ſemitonio.
Cap. xvii. In quibus primis numeris ſemitonium conſtet.
Cap. xviii. Diateſſaron a diapente tono diſtare.
Cap. xix. Diapaſon quinque tonis, et duobus ſemitoniis jungi.
Cap. xx. De additione chordarum, earumque nominibus.

The ſubſtance of this chapter has already been given.

Cap. xxi. De generibus cantilenarum.
Cap. xxii. De ordine chordarum nominibuſque in tribus generibus.
Cap. xxiii. Quæ ſint inter voces in ſingulis generibus proportiones.

Theſe three chapters give a brief and but a very ſuperficial account of the genera.

Cap. xxiv. Quid ſit ſynaphe.
Cap. xxv. Quid ſit diezeuxis.

In theſe two chapters the difference between the conjunct and diſjunct tetrachords is explained.

Cap. xxvi. Quibus nominibus nervos appellaverit Albinus.

Albinus is ſaid by Caſſiodorus to have been a great man, and to have written a brief diſcourſe on muſic, which he himſelf had ſeen and attentively peruſed in one of the public libraries at Rome; and Caſſiodorus ſeems to prophecy that ſome time or other it would be taken away in an incurſion of the Barbarians: it has accordingly ſuſtained that fate; for Meibomius, in his preface to Gaudentius, ſpeaks of that manuſcript as irrecoverably loſt.

Cap. xxvii. Qui nervi quibus ſyderibus comparentur.

The ſubſtance of this chapter is for the moſt part an extract from Cicero de Repub. lib. VI. and is a declaration of the ſuppoſed analogy between the planets and the ſounds in the ſeptenary.

Cap. xxviii. Quæ ſit natura conſonantiarum.
Cap. xxix. Ubi conſonantiæ reperiuntur.
Cap. xxx. Quemadmodum Plato dicat fieri conſonantias.
Cap. xxxi. Quid contra Platonem Nicomachus ſentiat.
Cap. xxxii. Quæ conſonantia quam merito præcedat.
Cap. xxxiii. Quo ſint modo accipienda quæ dicta ſunt.

Cap. xxxiv. Quid ſit muſicus.

In this, which is a very curious chapter, the author obſerves that the theoretic branch of every ſcience is more honourable than the practical, for ‘ that practice attends like a ſervant, but reaſon com-
‘ mands like a miſtreſs; and unleſs the head executes what reaſon
‘ dictates, its labour is vain.’ He adds, ‘ the ſpeculations of reaſon
‘ borrow no aid of the executive part; but contrarywiſe, the opera-
‘ tions of the hand without the guidance of reaſon are of no avail;’
‘ —that the greatneſs of the merit and glory of reaſon may be col-
‘ lected from this; corporeal artiſts in muſic receive their appella-
‘ tions, not from the ſcience itſelf, but rather from the inſtruments,
‘ as the cithariſt from the cithara; the tibicen, or player on the pipe,
‘ from the tibia; but he only is the true muſician, who, weighing
‘ every thing in the balance of reaſon, profeſſes the ſcience of muſic,
‘ not in the ſlavery of execution, but in the authority of ſpeculation.
‘ In like manner he ſays thoſe who are employed in the erection of
‘ public ſtructures, or in the operations of war, receive no praiſe
‘ except what is due to induſtry and obedience; but to thoſe by
‘ whoſe ſkill and conduct buildings are erected, or victory at-
‘ chieved, the honours of inſcriptions and triumphs are decreed.’
He then proceeds to declare that three faculties are employed in the muſical art; one which is exerciſed in the playing on inſtruments, another that of the poet, which directs the compoſition of verſes, and a third which judges of the former two; and touching theſe, and that which he makes the principal queſtion in this chapter, he delivers his opinion thus: ‘ As to the firſt, the per-
‘ formance of inſtruments, it is evident that the artiſts obey as ſer-
‘ vants, and as to poets, they are not led to verſe ſo much by reaſon
‘ as by a certain inſtinct which we call genius. But that which
‘ aſſumes to itſelf the power of judging of theſe two, that can exa-
‘ mine into rhythmus, ſongs, and their verſe, as it is the exerciſe of
‘ reaſon and judgment, is moſt properly to be accounted muſic; and
‘ he only is a muſician who has the faculty of judging according to
‘ ſpeculation and the approved ratios of ſounds, of the modes, ge-
‘ nera, and rhythmi of ſongs, and their various commixtures, and of
‘ the verſes of the poets.’

Lib. II. cap. i. Proemium.

Cap. ii. Quid Pythagoras eſſe philoſophiam conſtituerit.

Cap. iii. De differentiis quantitatis, et quæ cuique diſciplinæ ſit deputata.
Cap. iv. De Relatæ quantitatis differentiis.
Cap. v. Cur multiplicitas antecellat.
Cap. vi. Qui ſint quadrati numeri deque his ſpeculatio.
Cap. vii. Omnem inequalitatem ex equalitate procedere, ejuſque demonſtratio.
Cap. viii. Regula quotlibet continuas proportiones ſuperparticulares inveniendi.
Cap. ix. De proportione numerorum qui ab alias metiunter.
Cap. x. Quæ ex multiplicibus et ſuperparticularibus multiplicitates fiant.
Cap. xi. Qui ſuperparticulares quos multiplices efficiant.

The nine foregoing chapters contain demonſtrations of the five ſeveral ſpecies of proportion of inequality; of theſe an explanation may be ſeen in that extract from Dr. Holder's Treatiſe on the Natural Grounds and Principles of Harmony, hereinbefore inſerted, with a view to facilitate the ſtudy of Boetius, and to render this very abſtruſe part of his work intelligible.

Cap. xii. De arithmetica, geometrica, harmonica, medietate.

The three ſeveral kinds of proportionality, that is to ſay, arithmetical, geometrical, and harmonical, are alſo explained in the extract from Dr. Holder's book above referred to.

Cap. xiii. De continuis mediætatibus et disjunctis.
Cap. xiv. Cur ita appellatæ ſint digeſtæ ſuperius medietates.
Cap. xv. Quemadmodum ab æqualitate ſupradictæ proceſſerant medietates.
Cap. xvi. Quemadmodum inter duos terminos ſupradictæ medietates viciſſim collocentur.
Cap. xvii. De conſonantiarum modo ſecundum Nicomachum.
Cap. xviii. De ordine conſonantiarum ſententia Eubulidis et Hippaſi.

Two ancient muſicians, of whoſe writings we have nothing now remaining.

Cap. xix. Sententia Nicomachi quæ quibus conſonantiis apponantur.
Cap. xx. Quid oporteat præmitti, ut diapaſon in multiplici genere demonſtretur.

Cap. xxi. Demonſtratio per impoſſibile, diapaſon in multiplici genere eſſe.

Cap. xxii. Demonſtratio per impoſſibile, diapente, diateſſaron, et tonum in ſuperparticulari eſſe.

Cap. xxiii. Demonſtratio diapente et diateſſaron in maximis ſuperparticularibus collocari.

Cap. xxiv. Diapente in ſeſquialtera, diateſſaron, in ſeſquitertia eſſe, tonum in ſeſquioctava.

Cap. xxv. Diapaſon ac diapente in tripla proportione eſſe; biſdiapaſon in quadrupla.

Cap. xxvi. Diateſſaron ac diapaſon non eſſe conſonantiam, ſecundum Pythagoricos.

The two foregoing chapters have an immediate connection with each other; in the firſt it is demonſtrated that the diapaſon and diapente conjoined, making together the conſonant interval of a twelfth, are in triple proportion; and that the biſdiapaſon is in quadruple proportion, the ratios whereof are ſeverally 3 to 1 and 4 to 1; but with reſpect to the diapaſon and diateſſaron conjoined, the ratio whereof is 8 to 3, the interval ariſing from ſuch conjunction is clearly demonſtrated by Boetius to be diſſonant: from hence ariſes an evident diſcrimination between the diateſſaron and the other perfect conſonances; for whereas not only they but their replicates are conſonant, this of the diateſſaron is ſimply a conſonance itſelf, its replicates being diſſonant. It is true that the modern muſicians do not reckon the diateſſaron in the number of the conſonances; and whether it be a concord or a diſcord has been a matter of controverſy; nevertheleſs it is certain that among the ancients it was always looked upon as a conſonance, and that with ſo good reaſon, that Lord Verulam * profeſſes to entertain the ſame opinion; and yet after all, the imperfection which Boetius has pointed out in this chapter, ſeems to ſuggeſt a very good reaſon for diſtinguiſhing between the diateſſaron and thoſe other intervals, which, whether taken ſingly, or in conjunction with the diapaſon, are conſonant.

Cap. xxvii. De ſemitonio in quibus minimis numeris conſtet.

The arguments in this chapter are of ſuch a kind, that it behoves every muſician to be maſter of them. The ratios of the limma and apotome have already been demonſtrated in thoſe larger numbers

* Nat. Hiſt. Cent. II. Numb. 107.

which

which Ptolemy had made choice of for the purpoſe. In this chapter Boetius gives the ratio of the limma in the ſmalleſt numbers in which it can poſſibly conſiſt, that is to ſay, 256 to 243; and as this is the moſt uſual deſignation of the Pythagorean limma, or the interval, which, being added to two ſeſquioctave tones, completes the interval of a diateſſaron, it is a matter of ſome conſequence to know how theſe numbers are brought out; and this will beſt be declared in the words of Boetius himſelf, which are as follow:

'The ſemitones ſeem to be ſo called not that they are exactly the halves of tones, but becauſe they are not whole tones. 'The interval which we now call a ſemitone was by the ancients 'called a limma, or dieſis; and it is thus found: if from the ſeſquitertia proportion, which is the diateſſaron, two ſeſquioctave ratios, 'be taken away, there will be left an interval, called a ſemitone. 'To prove this, let us find out two conſecutive tones; but becauſe 'theſe, as has been ſaid, are conſtituted in ſeſquioctave proportion, 'we cannot find two ſuch, until that multiple from whence they are 'derived be firſt found: let therefore unity be firſt ſet down, and 'then 8, which is its octuple: from this we derive one multiple; 'but becauſe we want to find two, multiply 8 by 8, to produce 64, 'which will be a ſecond multiple, from which we may bring out 'two ſequioctave ratios; for if 8, which is the eighth part of 64, 'be added thereto, the ſum will be 72; and if the eighth part of 'this, which is 9, be added to it, the ſum will be 81; and theſe will 'be the two conſecutive tones, in their loweſt terms. Thus, ſet 'down 64, 72, 81.

| 64 | 72 | 81 |

Tone. Tone.

Seſquioctave. Seſquioctave.

'We are now therefore to ſeek a ſeſquitertia to 64; but it is found 'not to have a third part: wherefore, all theſe numbers muſt be 'multiplied by 3, and all remain in the ſame proportion as they were 'in before this multiplication by 3. Then three times 64 makes '192, to which if we add its third part, 64, the ſum will be 256; 'which gives the ſeſquitertia ratio, containing the diateſſaron. Then 'ſet down the two ſeſquioctaves to 192, in their proper order, 'that is, three times 72, which is 216, and three times 81, which is

'that

'that 243: theſe two being ſet between the terms of the ſeſquitertia,
'the whole will ſtand thus:

Tone	Tone	Semit.	
192	216	243	256
Diateſſaron.			

'In this diſpoſition of the numbers, the firſt conſtitutes a diateſ-
'ſaron with the laſt, and the firſt with the ſecond, and alſo the
'ſecond with the third, do each conſtitute a tone; therefore the
'remaining intervals 243 and 256, is a ſemitone in its leaſt terms.'

Cap. xxviii. Demonſtrationes non eſſe, 243, ad 256, toni medietatem.

That the limma in the ratio 256 to 243 is leſs than a true ſemitone, has been already demonſtrated in the courſe of this work.

Cap. xxix. De majore parte toni in quibus minimis numeris conſtet.

The apotome has no place in the ſyſtem, nor can it in any way be conſidered as a muſical interval; in ſhort, it is nothing more than that portion of a ſeſquioctave tone that remains after the limma has been taken therefrom. For this reaſon, its ratio is a matter of mere curioſity; and it ſeems from this chapter of Boetius, that the ſmalleſt numbers in which it can be found to conſiſt, are thoſe which Ptolemy makes uſe of, that is to ſay, 2187 to 2048.

Cap. xxx. Quibus proportionibus diapente, diapaſon, conſtent, et quoniam diapaſon ſex tonis non conſtet.

The demonſtrations contained in this chapter are levelled againſt the Ariſtoxenians, and declare ſo fully the ſentiments of the Pythagoreans, with reſpect to the meaſure of the conſonant intervals, that they are worthy of particular attention, and cannot be better given than in the words of Boetius himſelf.

'The diapente conſiſts of three tones and a ſemitone, that is, of a
'diateſſaron and a tone: for let the numbers 192, 216, 243, 256,
'comprehended in the above ſcheme, be ſet down thus:

DIATESSARON

192	216	243	256

Tone Tone Semitone.

'In

'In this diſpoſition, the firſt number to the ſecond and the ſecond 'to the third, bear the proportions of tones, and the third to the 'fourth that of a leſſer ſemitone, as has been ſhewn above. If then 'for the purpoſe of aſcertaining the contents of the diapente, 32 be 'added to 256, the ſum will be 288, which is another ſeſquioctave 'tone; for 32 is the eighth part of 259, and 256 to 288 is 8 to 9. 'The extreme numbers will then be 192 to 288, which is ſeſquialtera, 'the ratio of the diapente.

192	288

DIAPENTE
Seſquialtera.

'Finally, by comparing the firſt number with the ſecond, the ſe-'cond with the third, and the fourth with the fifth, i. e. 288, it 'will plainly appear, firſt, that in the diapente are three tones, and 'a leſſer ſemitone. If then the diateſſaron conſiſts of two tones and 'a leſſer ſemitone, and the diapente of three tones and a leſſer ſemi-'tone; and if the diateſſaron and diapente make up together the dia-'paſon, it will follow, that in the diapaſon are five tones and two 'leſſer ſemitones, which joined together do not make up a full and 'complete tone, and therefore that the diapaſon does not conſiſt of 'ſix tones, as Ariſtoxenus imagined, which alſo will evidently appear 'when theſe intervals are properly diſpoſed in numbers. For let ſix 'octuples be thus produced:

1, 8, 64, 512, 4096, 32768, 262144.

'From this laſt number ſix tones, conſtituted in ſeſquioctave pro-'portion, may be ſet down, with the octuple terms and their ſeveral 'eighth parts, in the order following:

	Octuples.		
	1, 8, 64, 512, 4096, 32768, 262144.		
Seſquioctaves.	262144	Eighth parts.	32768
	294912		36864
	331776		41472
	373248		46656
	419904		52488
	472392		59049
	531441		

The

'The nature of the above diſpoſition is this: the firſt line contains the octuple numbers; and the ſeſquioctave proportions in the firſt column are deduced from the laſt of them. The numbers contained in the ſecond column are the eighth parts of thoſe to which they are reſpectively oppoſite; and if each of theſe be added to the number againſt it, the ſum will be the number of the next ſeſquioctave, in ſucceſſion. Thus, if to the number 262144 32768 be added, the ſum will be 294912; and the reſt are found in the ſame manner. And were the laſt number, 531441, duple to the firſt, 262144, then would the diapaſon truly conſiſt of ſix tones; but here it is found to be more; for the duple of 292144 is 524288, and the number of the ſixth tone is 531441. Hence it appears, that the conſonant diapaſon is leſs than ſix tones; and the exceſs of the ſix tones above the diapaſon is called a comma, which in its loweſt terms is 52428 to 531441.

7153
524288 531441

COMMA, or the interval by which ſix tones exceed a diapaſon*

Six Octuples.

1	8	64	512	4096	32768	262144
	9	72	576	4608	36864	294912
		81	648	5184	41472	331776
			729	5832	46656	373248
				6561	52488	419904
					59049	472392
						531441

All the diagonals are ninefold.

The numbers in the upper row make ſix octuples, and thoſe placed under them are ſeſquioctaves to each other in ſucceſſion.

* This is called the Pythagorean comma, and is taken notice of by Merſennus, vide Harmonicor. de Diſſonantiis, pag. 88. It is leſs than that of 81 to 80, called the comma majus, or ſchiſma, and is the difference between the greater and leſſer tone.

In

In the third book Boetius continues his controverſy with the Ariſtoxenians, who, as they aſſert that the diateſſaron contains two tones and an half, and the diapente three tones and an half, muſt be ſuppoſed to believe that the tone is capable of a diviſion into two equal parts, contrary to that maxim of Euclid, that 'inter ſuperparticulare non 'cadit medium,' a ſuperparticular ration cannot have a mediety. And Boetius, in the firſt chapter of his third book, with great clearneſs and preciſion demonſtrates, that no ſuch diviſion of the tone can be made, as that which Ariſtoxenus and his followers contend for.

Lib. III. cap. i. Adverſus Ariſtoxenum demonſtratio, ſuperparticularem proportionem dividi in æqua non poſſe, atque ideo nec tonum.

Cap. ii. Ex ſeſquitertia proportione ſublatis duobus tonis, toni dimidium non relinqui.

Cap. iii. Adverſum Ariſtoxenum demonſtrationes, diateſſaron conſonantiam ex duobus tonis et ſemitonio non conſtare, nec diapaſon ſex tonis.

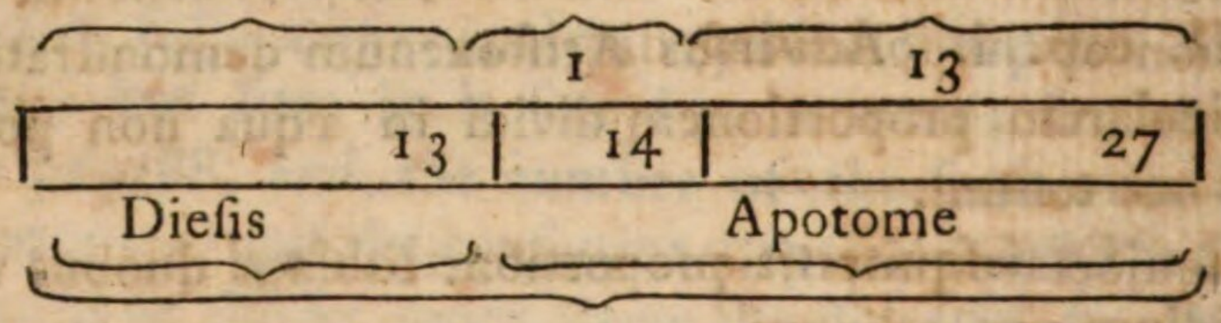
Cap. iv. Diapaſon conſonantiam à ſex tonis commate excedi, et qui ſit minimus numerus commatis.

Cap. v. Quemadmodum Philolaus tonum dividat.

Pythagoras found out the tone by the difference of a fourth and fifth, ſubtracting one from the other; Philolaus, who was of his ſchool, proceeded farther, and effected a diviſion of the tone into commas. The manner of his doing it is thus related by Boetius:

'Philolaus the Pythagorean tried to divide the tone, by taking the 'original of the tone from that number which among the Pytha-'goreans was eſteemed very honourable: for as the number 3 is the 'firſt uneven number, that multiplied by 3 will give 9, which being 'multiplied by 3 will neceſſarily produce 27, which is diſtant from 'the number 24 by a tone, and preſerves the ſame difference of 3; 'for 3 is the eighth part of 24, and being added thereto completes the 'cube of the number 3, viz. 27. Philolaus therefore divided this into 'two parts; one whereof was greater than the half, which he called 'the apotome; and the other leſs, which he termed the dieſis, and 'thoſe that came after him denominated a leſſer ſemitone; and their 'difference he termed a comma. The dieſis he ſuppoſed to conſiſt of '13 unities, becauſe he ſuppoſed that to be the difference between '243 and 256, and becauſe the number 13 conſiſted of 9, 3, and

'. unity; which unity he conſidered as a punctum. 3 he conſidered as
' the firſt uneven number, and 9 as the firſt uneven ſquare: for this
' reaſon, when he fixed the dieſis or ſemitone at 13, he made the re-
' maining part of the number 27, containing 14 unities to be the apo-
' tome. But becauſe unity is the difference between 13 and 14, he
' imagined unity ought to be aſſigned to the place of the comma; but
' the whole tone he made to be 27 unities, that number being the dif-
' ference between 216 and 243, which are diſtant from each other by
' a tone.'



Cap. vi. Tonum ex duobus ſemitoniis ac commate conſtare.
Cap. vii. Demonſtratio, tonum duobus ſemitoniis commate diſtare.
Cap. viii. De minoribus ſemitonii intervallis.
Cap. ix. De toni partibus per conſonantias ſumendis.
Cap. x. Regula ſumendi ſemitonii.
Cap. xi. Demonſtratio Archytæ, ſuperparticularem in equa dividi non poſſe ejuſque: reprehenſio.

It ſeems by this chapter, that this Archytas, who it is ſuppoſed was he of Tarentum, mentioned in the account herein before given of the genera and their ſpecies, was a Pythagorean. He it ſeems had undertaken to demonſtrate that propoſition of the Pythagorean ſchool, that a ſuperparticular ratio cannot be divided into two equally; but Boetius ſays he has done it in a looſe manner, and for this he reprehends him. It may be inferred from this chapter, that ſome of the writings of Archytas on muſic were in being in the time of Boetius; but that there are none now remaining is agreed by all.

Cap. xii. In qua numerorum proportione ſit comma, et quoniam in ea quæ major ſit quam 75 ad 74 minor quam, 74 ad 73.
Cap. xiii. Quod ſemitonium minus majus quidem ſit quam 20 ad 19, minus quam $19\frac{1}{2}$ ad $18\frac{1}{2}$.
Cap. xiv. Semitonium minus, majus quidem eſſe tribus comatibus; minus vero quatuor.

Cap. xv. Apotome majorem eſſe quam 4 commata, minorem quam 5. Tonum majorem quam 8, minorem quam 9.

Cap. xvi. Superius dictorum per numeros demonſtratio.

Lib. IV. cap. i. Vocum differentias in quantitate conſiſtere.

Cap. ii. Diverſæ de intervallis ſpeculationes.

This, as its title imports, is a chapter of a miſcellaneous kind. Among other things, it contains a demonſtration ſomewhat different from that which he had given before, that ſix ſeſquioctave tones are greater than a duple interval. That they are ſo will appear upon a bare inſpection of the following diagram.

Six ſeſquioctave proportions greater than a duple interval.

Seſqui-octave.	Seſqui-octave.	Seſqui-octave.	Seſqui-octave.	Seſqui-octave.	Seſqui-octave.	Seſqui-octave.
A	B	C	D	E	G	K
262144.	294912.	331776.	373248.	419904.	472392.	531441.

The number A 262144. is half the underwritten number; and therefore the diapaſon is deficient of the number K by 7153.

The duple interval reaches to 524288.

Cap. iii. Muſicarum per Græcas ac Latinas literas notarum nuncupatio.

In this chapter are contained ſome of the principal characters uſed by the Greeks in their muſical notation. It ſeems, that at the time when Glareanus publiſhed his edition of Boetius, they had been corrupted, which, conſidering they were arbitrary, or at beſt that they were the letters of the Greek alphabet reduced to a ſtate of deformity, is not to be wondered at. Meibomius had the good fortune to get intelligence of an ancient manuſcript here in England, in which this chapter was found, in a ſtate of great purity. He had intereſt enough with Mr. Selden to get him to collate his own by it; and the whole is

very correctly publiſhed, and prefixed to the Iſagoge of Alypius, in his edition of the ancient muſical authors.

Cap. iv. Monochordi regularis partitio in genere diatonico.
Cap. v. Monochordi netarum hyperboleon per tria genera partitio.
Cap. vi. Ratio ſuperius digeſtæ deſcriptionis.
Cap. vii. Monochordi netarum diezeugmenon per tria genera partitio.
Cap. viii. Monochordi netarum ſynemmenon per tria genera partitio.
Cap. ix. Monochordi meſon per tria genera partitio.
Cap. x. Monochordi hypaton per tria genera partitio, et totius diſpoſitio deſcriptionis.
Cap. xi. Ratio ſuperius diſpoſitæ deſcriptionis.
Cap. xii. De ſtantibus et mobilibus vocibus.
Cap. xiii. De conſonantiarum ſpeciebus.
Cap. xiv. De modorum exordiis, in quo diſpoſitio notarum per ſingulos modos ac voces.
Cap. xv. Deſcriptio continens modorum ordinem ac differentias.
Cap. xvi. Superius diſpoſitæ modorum deſcriptiones.
Cap. xvii. Ratio ſuperius diſpoſitæ modorum deſcriptionis.
Cap. xviii. Quemadmodum indubitanter muſicæ conſonantiæ aure dijudicari poſſint.

Lib. V. Proemium.

In this Boetius gives the form of the monochord, little differing from that of Ptolemy and Porphyry herein before deſcribed.

Cap. i. De vi harmonicæ, et quæ ſint ejus inſtrumenta judicii, et quo nam uſque ſenſibus oporteat credi.
Cap. ii. Quid ſit harmonica regula, vel quam intentionem harmonici Pythagorici, vel Ariſtoxenus, vel Ptolemæus eſſe dixere.
Cap. iii. In quo Ariſtoxenus, vel Pythagorici, vel Ptolemæus gravitatem atque acumen conſtare poſuerint.
Cap. iv. De ſonorum differentiis Ptolemæi ſententia.
Cap. v. Quæ voces enharmoniæ ſunt aptæ.
Cap. vi. Quem numerum proportionum Pythogarici ſtatuunt.

Cap.

Cap. vii. Quod reprehendat Ptolemæus Pythagoricos in numero proportionum.
Cap. viii. Demonſtratio ſecundum Ptolemæum diapaſon et diateſſaron conſonantiæ.
Cap. ix. Quæ ſit proprietas diapaſon conſonantiæ.
Cap. x. Quibus modis Ptolemæus conſonantias ſtatuat.
Cap. xi. Quæ ſunt equiſonæ, vel quæ conſonæ, vel quæ emmelis.
Cap. xii. Quemadmodum Ariſtoxenus intervallum conſideret.
Cap. xiii. Deſcriptio octochordi, qua oſtenditur diapaſon conſonantiam minorum eſſe ſex tonis.
Cap. xiv. Diateſſaron conſonantiam tetrachordo contineri.
Cap. xv. Quomodo Ariſtoxenus vel tonum dividat vel genera ejuſque diviſionis diſpoſitio.
Cap. xvi. Quomodo Archytas tetrachordo dividat, eorumque deſcriptio.
Cap. xvii. Quemadmodum Ptolemæus et Ariſtoxeni et Archytæ, tetrachordorum diviſiones reprehendat.
Cap. xviii. Quemadmodum tetrachordorum diviſionem fieri dicat oportere.

CHAP. VII.

FROM the foregoing extracts a judgment may be formed, not only of the work from which they are made, but alſo of the manner in which the ancients, more eſpecially the followers of Pythagoras, thought of muſic. Well might they deem it a ſubject of philoſophical ſpeculation, when ſuch abſtruſe reaſoning was employed about it. To ſpeak of Boetius in particular, it is clear that he was upon the whole a Pythagorean, though he has not ſpared to detect many of the errors imputed to that ſect; and his work is ſo truly theoretic, that in reading him we never think of practice: the mention of inſtruments, nor of the voice, as employed in ſinging, never occurs; no alluſions to the muſic of his time, but all abſtracted ſpeculation, tending doubtleſs to the perfection of the art, but ſeemingly little connected with it. Here then the twofold nature of muſic is apparent: it has its foundation in number and proportion; like geometry,

metry, it affords that kind of pleaſure to the mind which reſults from the contemplation of order, of regularity, of truth, the love whereof is connatural with human nature; like that too, its principles are applicable to uſe and practice. View it in another light, and if it be poſſible, conſider muſic as mechanical, as an arbitrary conſtitution, as having no foundation in reaſon: but how exquiſite is the pleaſure it affords! how ſubſervient are the paſſions to its influence! and how much is the wiſdom and goodneſs of God manifeſted in that relation which, in the caſe of muſic, he has eſtabliſhed between the cauſe and the effect!

That Boetius is an obſcure writer muſt be allowed; the very terms uſed by him, and his names for the proportions, though they are the common language of the ancient arithmeticians, are difficult to be underſtood at this time. Guido, who lived about five hundred years after him, ſcruples not to ſay, that 'his work is fit only for philoſo-'phers.' It was, nevertheleſs, held in great eſtimation for many centuries, and to this its reputation many cauſes co-operated; to which may be added that the Greek language was little underſtood, even by the learned, for a much longer period than that above mentioned; and to thoſe few that were maſters of it, all that treaſure of muſical erudition contained in the writings of Ariſtoxenus, Euclid, Nicomachus, Ptolemy, and the reſt of the Greek harmonicians, was inacceſſible. So late as the time of our queen Elizabeth, it was doubted whether the writings of ſome of them were any where extant in the world *.

For theſe reaſons, we are not to wonder that the Treatiſe de Muſica of Boetius was for many ages looked upon as the grand repoſitory of harmonical ſcience. To go no farther than our own country for proofs, the writings of all who treated on the ſubject before the beginning of the fourteenth century, and whoſe names are preſerved in the collections of Leland, Bale, Pits, and Tanner, are but ſo many commentaries on him: nay, an admiſſion to the firſt degree in muſic, in the univerſities of Oxford and Cambridge, was but a kind of manuduction to the ſtudy of his writings †; and in the latter the exerciſe for a doctor's degree was generally a lecture on Boetius ‡.

* Morley, in the Peroratio to his Introduction.

† Wood, in the Faſti. Oxon. pag. 5. 8. ſays, of bachelors of muſic, that they were ſuch who were admitted to the reading any of the muſical books of Boetius; and in his account of John Mendus, a ſecular prieſt, who, anno 1535, ſupplicated for that decree, he ſays, he obtained it with the privilege of reading Boetius. Faſti Oxon. pag. 56.

‡ Athen. Oxon. paſſim.

And

And, to come nearer to our own times, Salinas and Zarlino have purſued the ſame train of reaſoning that Boetius firſt introduced. If it be aſked how has this contributed to the improvement of muſic, the anſwer is not eaſy, if the queſtion refers to the practice of it; ſince what Merſennus and others have ſaid is very true, that in the diviſion of ſounds we are determined wholly by the ear, and not by ratios; and therefore the makers and tuners of inſtruments are in fact, though they know it not, Ariſtoxenians; but if by Muſic we are to underſtand the Theory of the ſcience, this method of treating it has contributed greatly to its improvement. This is enough to ſatisfy ſuch as are aware of the importance of theory in every ſcience: thoſe whoſe minds are too illiberal to conceive any thing beyond practice and mere manual operation or energy, might perhaps demand, What has theory, what have the ratios of numbers to do with an art, the end whereof is to move the paſſions, and not convince the underſtanding; were theſe conſidered, or even underſtood, by the ableſt profeſſors of the ſcience; did Paleſtrina, Stradella, did Corelli adjuſt their harmonies by the monochord, or conſult Euclid or Ptolemy when they compoſed reſpectively their motets, madrigals, and concertos; or is it neceſſary in the performance of them that the ſingers, or any of thoſe who perform on an inſtrument, the tuning whereof is not adjuſted to their hands, perpetually bear in mind the true harmonic canon, and be aware of the difference between the greater and leſſer tone, and the greater and leſſer ſemitone; and that what in common practice is called a ſemitone, is in fact an interval in the ratio of 256 to 243, and unleſs ſo prolated is a diſſonance? And after all it may perhaps be argued that this kind of knowledge adds nothing to the pleaſure we receive from muſic.

To ſuch as are diſpoſed to reaſon in this manner it may be ſaid, We all know that the dog who treads the ſpit-wheel; or, to go higher, the labourer that drives a wedge, or adds the ſtrength of his arms to a lever, are ignorant of all but the effects of their labour; but we alſo know that the ignorance of the brute and of the uninſtructed rational in this reſpect afford no reaſon why others are to remain ignorant too; much leſs does it prove it fruitleſs and vain for men of a philoſophical and liberal turn of mind to attempt an inveſtigation of the principles upon which theſe machines act *.

* The reader will find this argument much better enforced by the learned and ingenious author of a treatiſe intitled Hermes or a Philoſophical Inquiry concerning Univerſal Grammar.

Farther, as a motive to the ſtudy of the ratios and coincidences of harmonic intervals, it may be ſaid that the nobleſt of our faculties are exerciſed in it; and that the pleaſure ariſing from the contemplation of that truth and certainty which are found in them, is little inferior to what we receive from hearing the moſt excellent muſic. And to this purpoſe the learned and ingenious Dr. Holder expreſſes himſelf in a paſſage which is inſerted in a note ſubjoined *.

After all, we ought not to eſtimate the works of learned men by the conſideration of their immediate utility: to inveſtigate is one thing; to apply, another; and the love of ſcience includes in it a degree of enthuſiaſm, which whoever is without, will want the ſtrongeſt motive to emulation and improvement that the mind is ſuceptible of. Is it to be conceived that thoſe who are employed in mathematical reſearches attend to the conſequences of their own diſcoveries, or that their purſuits are not extended beyond the proſpect of bare utility? In ſhort, no conſiderable progreſs, no improvement in any ſcience can be expected, unleſs it be beloved for its own ſake: as well might we expect the continuation of our ſpecies from principles of reaſon

Grammar. Here it was neceſſary to vary it, in order to adapt it to the preſent ſubject; but the author applies it to that of ſpeech; the whole paſſage is very beautiful, and is as follows: 'Methinks I hear ſome objector, demanding with an air of pleaſantry and ridicule—Is there no ſpeaking then without all this trouble? Do we not talk every one of us, as well unlearned as learned, as well poor peaſants as profound philoſophers? We may anſwer by interrogating on our part—Do not thoſe ſame poor peaſants uſe the lever and the wedge, and many other inſtruments, with much habitual readineſs? And yet have they any conception of thoſe geometrical principles from which thoſe machines derive their efficacy and force? And is the ignorance of theſe peaſants a reaſon for others to remain ignorant, or to render the ſubject a leſs becoming enquiry? Think of animals and vegetables that occur every day—of time, of place, and of motion—of light, of colours, and of gravitation—of our ſenſes and intellects by which we perceive every thing elſe—That they are, we all know and are perfectly ſatisfied—What they are, is a ſubject of much obſcurity and doubt; were we to reject this laſt queſtion becauſe we are certain of the firſt, we ſhould baniſh all philoſophy at once out of the world.' Hermes, pag. 293.

* 'And in ſearching, ſtating, and comparing the rations of thoſe intervals of ſounds by which harmony is made, there is found ſo much variety and certainty, and facility of calculation, that the contemplation of them may ſeem not much leſs delightful than the very hearing the good muſic itſelf, which ſprings from this fountain; and thoſe who have already an affection for muſic cannot but find it improved and much enhanced by this pleaſant and recreating chace, as I may call it, in the large field of harmonic rations and proportions, where they will find, to their great pleaſure and ſatisfaction, the hidden cauſes of harmony (hidden to moſt, even to practitioners themſelves) ſo amply diſcovered and laid plain before them.' Natural Grounds and Principles of Harmony, chap. v.

and

and duty, abſtracted from that paſſion which holds the animal world in ſubjection, and to which humane nature itſelf owes its exiſtence *.

Taking this for granted, the merit of Boetius will appear to conſiſt in the having communicated to the world ſuch a knowledge of the fundamental principles of the ancient muſic, as is abſolutely neceſſary to the right underſtanding even of our own ſyſtem: and this too at a period when there was little or no ground to hope for any other intelligence, and therefore Morley has done him but juſtice in the eulogium which he has given of him in the following words. 'Boetius being by birth noble, and moſt excellent well uerſed in di-'uinity, philoſophy, law, mathematicks, poetry, and matters of 'eſtate, did notwithſtanding write more of muſick than of al the 'other mathematical ſciences, ſo that it may be juſtly ſaid, that if it 'had not beene for him the knowledge of muſicke had not yet come 'into our weſterne part of the world. The Greek tongue lying as it 'were dead under the barbariſme of the Gothes and Hunnes, and 'muſicke buried in the bowels of the Greeke works of Ptolemæus

* For the farther illuſtration of this propoſition, viz. that knowledge is an object worthy to be purſued for its own ſake, we muſt be indebted to the author above-cited, who to this purpoſe thus expreſſes himſelf: 'But a graver objector now accoſts us. What (ſays he) 'is the utility, whence the profit, where the gain? Every ſcience whatever (we may 'anſwer) has its uſe. Arithmetic is excellent for gauging of liquors; geometry for mea-'ſuring of eſtates; aſtronomy for making of almanacks; and grammar perhaps for draw-'ing of bonds and conveyances.

'Thus much to the ſordid—If the liberal aſk for ſomething better than this, we may 'anſwer, and aſſure them from the beſt authorities, that every exerciſe of the mind upon 'theorems of ſcience, like generous and manly exerciſe of the body, tends to call forth 'and ſtrengthen nature's original vigour. Be the ſubject itſelf immediately lucrative or 'not, the nerves of reaſon are braced by the mere employ, and we become abler actors in 'the drama of life, whether our part be of the buſier, or of the ſedater kind.

'Perhaps too there is a pleaſure even in ſcience itſelf, diſtinct from any end to which 'it may be farther conducive. Are not health and ſtrength of body deſirable for their 'own ſakes, though we happen not to be fated either for porters or draymen? And have 'not health and ſtrength of mind their intrinſic worth alſo, though not condemned to the 'low drudgery of ſordid emolument? Why ſhould there not be a good (could we have 'the grace to recognize it) in the mere energy of our intellect, as much as in ener-'gies of lower degree? The ſportſman believes there is good in his chace; the man of 'gaiety, in his intrigue; even the glutton, in his meal. We may juſtly aſk of theſe, why 'they purſue ſuch things; but if they anſwer they purſue them becauſe they are good, 'twould be folly to aſk them farther, why they purſue what is good. It might well in 'ſuch caſe be replied on their behalf (how ſtrange ſoever it may at firſt appear) that if there 'was not ſomething good, which was in no reſpect uſeful, even things uſeful themſelves 'could not poſſibly have exiſtence. For this is in fact no more than to aſſert, that ſome 'things are ends, ſome things are means; and that if there were no ends, there could be 'of courſe no means.' Hermes, pag. 294.

'and Ariſtoxenus, the one of which as yet hath never come to light, 'but lies in written copies in ſome bibliothekes of Italy, the other 'hath been ſet out in print; but the copies are every where ſo ſcant 'and hard to come by, that many doubt if he have beene ſet out 'or no *.'

Other improvements were reſerved for a more enlightened age, when the ſtudy of phyſics began to be cultivated, when the hypotheſes of the ancients were brought to the teſt of experiment; and the doctrine of pendulums became another medium for demonſtrating the truth of thoſe ratios which the ancient harmonicians had inveſtigated merely by the power of numbers.

To the reaſons above adduced in favour of the writings of Boetius, another may be added, which every learned reader will acquieſce in, namely, that he was the laſt of the Latin writers whoſe works have any pretence to purity, or to intitle them to the epithet of claſſical.

It muſt however be confeſſed that the treatiſe De Muſica of Boetius is but part of a much larger diſcourſe which he intended on that ſubject: moſt authors ſpeak of it as of a fragment, and the very abrupt manner in which it concludes ſhews that he had not put the finiſhing hand to it. The whole of the five books extant are little more than an inveſtigation of the ratios of the conſonances, the nature of the ſeveral kinds of proportionality, and a declaration of the opinions of the ſeveral ſects with reſpect to the diviſion of the monochord and the general laws of harmony: theſe are, it is true, the foundations of the ſcience, but there remained a great deal more to be ſaid in order to render this work of Boetius complete; and that it was his deſign to make it ſo, there is not the leaſt reaſon to doubt.

The deſiderata of the ancient muſic ſeem to be the genera and the modes, and to theſe may be added the meaſure of ſounds in reſpect of their duration, or, in other words, the laws of metre. It is to be obſerved that muſic was originally vocal, and in that ſpecies of it the voice was employed, not in the bare utterance of inarticulate ſounds, but of poetry, to the words whereof correſpondent ſounds in an harmonical ratio were adopted, and therefore the duration of thoſe ſounds might be, and probably was determined by the meaſure of the verſe, yet both were ſubject to metrical laws, which had been largely diſcuſſed

* See the Peroratio to his Introduction, towards the end.

before

before the time of Boetius, and theſe it became a writer like him to have reduced to ſome ſtandard.

Had Boetius lived to complete his work, it is more than probable that he would have entered into a diſcuſſion of the modes of the ancients, and not left it a queſtion, as it is at this day, whether they regarded only the ſituation of the final or dominant note in reſpect of the ſcale, or whether they conſiſted in the different poſition of the tones and ſemitones in the ſyſtem of a diapaſon. For the ſame reaſon we may conclude that, had not his untimely death prevented it, Boetius would have treated very largely on the eccleſiaſtical tones: he was a Chriſtian, and, though not an enthuſiaſt, a devout man; muſic had been introduced into the church-ſervice for above a century before the time when he lived; St. Ambroſe had eſtabliſhed the chant which is diſtinguiſhed by his name, and the eccleſiaſtical tones, then but four in number, were evidently derived from the modes of the ancients.

Theſe are but conjectures, and may perhaps be thought to include rather what was to be wiſhed than expected from a writer of ſo philoſophical a turn as Boetius; we have nevertheleſs great reaſon to lament his ſilence in theſe particulars, and muſt impute the preſent darkneſs in which the ſcience is unhappily involved, to the want of that information which he of all men of his time ſeems to have been the moſt able to communicate.

Magnus Aurelius Caſſiodorus, ſenator, a chriſtian, born at Brutium, on the confines of Calabria, flouriſhed about the middle of the ſixth century. He had a very liberal education conſidering the growing barbariſm of the age he lived in, and by his wiſdom, learning, and eloquence, recommended himſelf to the protection of the Gothic kings Theodoric and Athalaric, Amalaſuentha the daughter of the former, Theodohadus her huſband, and Vitiges his ſucceſſor. Theodoric appointed him to the government of Sicily, in which province he gave ſuch proofs of his abilities, that in the year 490 he made him his chancellor, and admitted him to his councils. After having filled ſeveral important and honourable poſts in the ſtate, he was advanced to the conſulate, the duties of which office he diſcharged without any colleague in the year 514. He was continued in the ſame degree of confidence and favour by Athalaric, who ſucceeded Theodoric about the year 526; but in the year 537, being

diſmiſſed from all his employments by Vitiges, he betook himſelf to a religious life. Trithemius ſays he became a monk, and afterwards abbot of the monaſtery of Ravenna; after which it ſeems he retired to the monaſtery of Viviers, in the extreme parts of Calabria, which he had built and endowed himſelf. In his retirement from the buſineſs of the world he led the life of a ſcholar, a philoſopher, and a Chriſtian, amuſing himſelf at intervals in the invention and framing of mechanical curioſities, ſuch as ſun-dials, water hour-glaſſes, perpetual lamps, &c. He collected a very noble and curious library, and wrote many books himſelf, particularly Commentaries on the Pſalms, Canticles, the Acts of the Apoſtles, the Epiſtles of St. Paul, and the Apocalypſe, and a Chronology: farther he framed, or drew into one body, the tripartite hiſtory of Socrates, Sozomen, and Theodoret, tranſlated by Epiphanius the ſcholaſtic. He wrote alſo Inſtitutionem Divinarum Lectionum, in two books, which Du Pin ſays abounds with fine remarks on the Holy Scriptures, and a treatiſe De Ratione Animæ, which the ſame writer alſo highly commends. There are extant of his, twelve books of Letters, ten of which are written in the names of Theodoric and Athalaric, he being it ſeems ſecretary to them both; the other two are in his own name, and they all abound with a variety of curious and intereſting particulars. He was alſo the author of a treatiſe De ſeptem Diſciplinis, or of the Arts of Grammar, Rhetoric, Logic, Arithmetic, Geometry, Muſic, and Aſtronomy *; what he ſays of muſic is contained in one chapter or

* This arrangement of the liberal ſciences had been made before the time of Caſſiodorus, as appears by the fable De Nuptiis Philologiæ et Mercurii of Martianus Capella, which contains a ſeparate diſcourſe on each of them. This diviſion comprehends both the trivium and the quadrivium deſcribed in a preceding page. Moſheim cenſures the profeſſors, or ſcholaſtics, as they were called, of that day, for teaching the ſciences in a barbarous and illiberal manner.

'The whole circle of ſciences was compoſed of what they called the ſeven liberal arts, 'viz. grammar, rhetoric, logic, arithmetic, muſic, geometry, and aſtronomy; the three 'former of which they diſtinguiſhed by the title of trivium, and the four latter by that of 'quadrivium. Nothing can be conceived more wretchedly barbarous than the manner in 'which theſe ſciences were taught, as we may eaſily perceive from Alcuin's treatiſe con'cerning them; and the diſſertations of St. Auguſtin on the ſame ſubject, which were in 'the higheſt repute at this time. In the greateſt part of the ſchools the public teachers 'ventured no farther than the trivium, and confined their inſtructions to grammar, rhetoric, 'and logic; they, however, who, after paſſing the trivium, and alſo the quadrivium, 'were deſirous of riſing yet higher in their literary purſuits, were exhorted to apply themſelves to the ſtudy of Caſſiodorus and Boethius, as if the progreſs of human knowledge 'was bounded by the diſcoveries of thoſe two learned writers.' Eccleſiaſt. Hiſt. Cent. VIII. part ii. cap. 1.

ſection

fection of four quarto pages; in this he is very brief, referring very often to Gaudentius, Cenſorinus, and other writers. His general diviſion of muſic is into three parts, harmonic, rhythmic, and metric. His diviſion of inſtrumental muſic is alſo into three parts, namely, percuſſional, tenſile, and inflatile, agreeing in this reſpect with other writers of the beſt authority.

One thing worthy of remark in the treatiſe of Caſſiodorus De Muſica is, that he makes the conſonances to be ſix, namely, the diateſſaron, diapente, diapaſon, diapaſon and diateſſaron, or eleventh, diapaſon and diapente, or twelfth, and, laſtly, the biſdiapaſon; in which he manifeſtly differs from Boetius, whom he muſt have known and been intimate with, for Boetius has beſtowed a whole chapter in demonſtrating that the diapaſon cum diateſſaron is not a conſonant but a diſſonant. Caſſiodorus makes the number of the modes, or, as he calls them the tones, to be fifteen; from which circumſtance, as alſo becauſe he here prefers the word Tone to Mode, it may be concluded that he writes after Martianus Capella.

Caſſiodorus died at his monaſtery of Viviers, about the year 560, aged above ninety. Father Simon has given a very high character of his theological writings; they, together with his other works, have been ſeveral times printed, but the beſt edition of them is that of Rohan, in the year 1679, in two volumes folio, with the notes and diſſertations of Johannes Garetius, a Benedictine monk *.

The ſeveral improvements of muſic hereinbefore enumerated, regarded chiefly the theory of the ſcience, thoſe that followed were for the moſt part confined to practice: among the latter none have a greater title to our attention than thoſe made about the end of the

* Upon the writings of the Latins the remark is obvious, that they added nothing to muſical ſcience; and indeed their inferiority to the Greeks, both in philoſophy and the more elegant arts, ſeems to be allowed by the beſt judges of ancient literature.

Indeed in their practice of muſic they ſeem to have ſomewhat improved on that of their predeceſſors, as is evident from Vitruvius's deſcription of the hydraulic organ, an inſtrument which Sidonius Apollinaris takes notice of in one of his epiſtles, where he ſpeaks of the amuſements of Theodoric, and particularly adds that he was wont to be entertained with the muſic of the hydraulic organ while he ſat at dinner: and it is in the hiſtory of the period in which Boetius and Caſſiodorus flouriſhed, that we meet with the firſt intimation of ſuch a profeſſion as that of a teacher of muſic. The following is an epitaph in the epiſtles of the ſame Sidonius Apollinaris on one of this profeſſion.

Orator Dialecticus Poeta
Tractator, Geometra, Muſicus
Pſalmorum Modulator, Phonaſcus
Inſtructas docuit ſonare claſſes. Lib. IV. pag. 143.

ſixth century, by St. Gregory the Great, the firſt pope of that name, a man not more remarkable for his virtues than for his learning and profound ſkill in the ſcience of muſic.

The firſt improvement of muſic made by this father conſiſted in the invention of that kind of notation by the Roman letters, which is uſed at this day. It is true that before his time the uſe of the Greek characters had been rejected; and as the enarmonic and chromatic genera, with all the various ſpecies of the latter, had given way to the diatonic genus, the firſt fifteen letters of the Roman alphabet had even before the time of Boetius been found ſufficient to denote all the ſeveral ſounds in the perfect ſyſtem; and accordingly we find in his treatiſe De Muſica all the ſounds from Proſlambanomenos to Nete hyperboleon characteriſed by the Roman letters, from A to P incluſive; but Gregory reflecting that the ſounds after Lychanos meſon were but a repetition of thoſe before it, and that every ſeptenary in progreſſion was preciſely the ſame, reduced the number of letters to ſeven, which were A, B, C, D, E, F, G; but, to diſtinguiſh the ſecond ſeptenary from the firſt, the ſecond was denoted by the ſmall, and not the capital, Roman letters; and when it became neceſſary to extend the ſyſtem farther, the ſmall letters were doubled thus, aa, bb, cc, dd, ee, ff, gg.

But the encreaſing the number of tones from four to eight, and the inſtitution of what is called the Gregorian Chant, or plain ſong, is the improvement for which of all others this father is moſt celebrated. It has already been mentioned that St. Ambroſe when he introduced ſinging into the church-ſervice, ſelected from the ancient modes four, which he appropriated to the ſeveral offices: farther it is to be obſerved, that to theſe modes the appellation of Tones was given, probably on the authority of Martianus Capella, who, as Sir Henry Spelman remarks, was the firſt that ſubſtituted the term Tones in the room of Modes. But we are much at a loſs to diſcover more of the nature of the tones inſtituted by St. Ambroſe, than that they conſiſted in certain progreſſions, correſponding with different ſpecies of the diapaſon; and that under ſome kind of regulation, of which we are now ignorant, the divine offices were alternately chanted, and this by the expreſs inſtitution of St. Ambroſe himſelf, who all agree was the firſt that introduced the practice of alternate or antiphonal ſinging, at leaſt into the weſtern church; but it was ſuch a

kind

kind of recitation as in his own opinion came nearer to the tone of reading than ſinging *.

Cardinal Bona † cites Theodoret, lib. IV. to prove that the method of ſinging introduced by St. Ambroſe was alternate; and proceeds to relate that as the vigour of the clerical diſcipline, and the majeſty of the Chriſtian religion eminently ſhone forth in the eccleſiaſtical ſong, the Roman pontiffs and the biſhops of other churches took care that the clerks from their tender years ſhould learn the rudiments of ſinging under proper maſters; and that accordingly a muſic-ſchool was inſtituted at Rome by pope Hilary, or, as others contend, by Gregory the Great, to whom alſo we are indebted for reſtoring the eccleſiaſtical ſong to a better form; for though the practice of ſinging was from the very foundation of the Chriſtian church uſed at Rome, yet are we ignorant of what kind the eccleſiaſtical modes were, before the time of Gregory, or what was the diſcipline of the ſingers. In fact the whole ſervice ſeems to have been of a very irregular kind, for we are told that in the primitive church the people ſung each as his inclination led him, with hardly any other reſtriction than that what they ſung ſhould be to the praiſe of God. Indeed ſome certain offices, ſuch as the Lord's Prayer and the Apoſtle's Creed, had been uſed in the church-ſervice almoſt from the firſt eſtabliſhment of Chriſtianity ‡; but theſe were too few in number to prevent the introduction of hymns and ſpiritual ſongs at the pleaſure of the hereſiarchs, who began to be very numerous about the middle of the ſixth century, and that to a degree that called aloud for reformation. The evil increaſing, the emperor Theodoſius requeſted the then pope, Damaſus, to frame ſuch a ſervice as ſhould conſiſt with the ſolemnity and decency of divine worſhip; the pope readily aſſented, and employed for this purpoſe a preſbyter named Hieronymus, a man of learning, gravity, and diſcretion, who formed a new ritual, into which he introduced the Epiſtles, Goſpels, and the Pſalms ‖, with the Gloria Patri and Alleluiah; and theſe, together with certain hymns which he thought proper to retain, made up the whole of the ſervice.

* Voſſius De Scientiis mathematicis, cap. xxi. § 11.

† De Rebus Liturgicis.

‡ Nivers ſur le Chant Gregorien, chap. i.

‖ Ibid. Damaſus is ſaid to have firſt introduced the Pſalms into the ſervice. Platina in Damaſus, Iſaacſ. Chron. anno 371.

It is very doubtful whether any thing like an antiphonary exiſted at this time, or indeed whether St. Ambroſe did any thing more than inſtitute the tones, leaving it to the ſingers, under the regulations thereby preſcribed, to adapt ſuch muſical ſounds to the ſeveral offices as they ſhould from time to time think fit; and to this the confuſion that had ariſen in the church-ſervice was in a great meaſure owing. What methods were taken by Gregory to remedy this evil will be related in the following account of him.

CHAP. VIII.

GREGORY the Firſt, ſurnamed the Great, was born at Rome of an illuſtrious family, about the year 550. He ſtudied with great ſucceſs, and his quality and merit ſo recommended him, that the emperor Juſtin the younger made him prefect of that city. After he had held this high office for ſome time, he diſcovered that it made him too fond of the world, and thereupon he retired to a convent which he had founded in his own houſe at Rome; but he was ſoon called out of this retirement by pope Pelagius II. who, in 582, made him one of his deacons, and ſent him to Conſtantinople, there to reſide in the court of the emperor Tiberius, in quality of his nuncio or ſurrogate, though his immediate buſineſs there was to ſollicit ſuccours againſt the Lombards. Upon the death of Tiberius in 586, Gregory returned to Rome, and was there employed as ſecretary to Pelagius; but at length he obtained of him leave to retire again to his monaſtery, the government whereof he had formerly beſtowed on an eccleſiaſtic named Valentius, whom for his great merit he had taken from a monaſtery in the country. Here he thought to indulge himſelf in the pleaſures of a ſtudious and contemplative life, but was ſoon drawn from his retirement by a contagious diſeaſe, which at that time raged with ſuch violence, that eight hundred perſons died of it in one hour *. To avert this calamity Gregory quitted his retreat, came forth into the city, and inſtituted litanies and a ſevenfold proceſſion, conſiſting of ſeveral orders of the people, upon whoſe arrival

* One of the ſymptoms of this diſeaſe was a violent ſneezing, which was looked upon as mortal, and upon this occaſion gave riſe to the ejaculation 'God bleſs you!' in favour of ſuch as were ſuddenly taken with that convulſion. Iſaacſon's Chronology, anno 590.

at

at the great church it is ſaid the diſtemper ceaſed. Of this diſeaſe Pelagius himſelf died, and by the joint ſuffrage of the clergy, the ſenate, and people of Rome, Gregory was choſen for his ſucceſſor; but he was ſo little diſpoſed to accept this dignity, that he got himſelf ſecretly conveyed out of the city in a baſket, thereby deceiving the guards that were ſet at the gates to hinder his eſcape, and went and hid himſelf in a cave in the middle of a wood; but being diſcovered, he was prevailed on to return, and was conſecrated on the third of September 590, and was the firſt of the popes that uſed the ſtyle 'Servus ſervorum Dei.' He was of a very infirm and weakly conſtitution, but had a vigorous mind, and diſcharged the duties of his ſtation with equanimity and firmneſs. He poſſeſſed a great ſhare of learning, and was ſo well ſkilled in the tempers and diſpoſitions of mankind, that he made even the private intereſts and ambitious views of princes ſubſervient to the ends of religion. One of the greateſt events which by his prudence and good management he brought about during his pontificate, was the converſion of the Engliſh to Chriſtianity, which, as related by Bede, makes one of the prettieſt ſtories in our hiſtory. But what gives him a title to a place in this work is his having effected a reformation in the muſic of the church *.

Maimbourg in his Hiſtoire du Pontificat de St. Gregoire has collected from Johannes Diaconus and others, all that he could find on this ſubject. The account given by him is as follows.

'He eſpecially applied himſelf to regulate the office and the ſing-
'ing of the church, to which end he compoſed his antiphonary—
'nothing can be more admirable than what he did on this occaſion.
'Though he had upon his hands all the affairs of the univerſal
'church, and was ſtill more burthened with diſtempers than with
'that multitude of buſineſs which he was neceſſarily to take care of
'in all parts of the world, yet he took time to examine with what

* Johannes Diaconus, who wrote the life of this pope, ſays that he imitated the moſt wiſe Solomon in this reſpect; and that he with infinite labour and great ingenuity compoſed an antiphonary; and other writers add a gradual alſo, not in the way of compilation, or by collecting the offices therein contained, but that he dictated or pointed, and actually neumatized the muſical cantus both to the antiphonary and gradual. Neuma is a word poſſibly derived from the Greek πνευμα, and, as explained by Sir Henry Spelman, ſignifies an aggregation of as many ſounds as may be uttered in one ſingle reſpiration. Spelm. Gloſſ. voce NEUMA: and in this ſenſe it is uſed by Guido himſelf, Franchinus, and other writers.

'tunes the pſalms, hymns, oraiſons, verſes, reſponſes, canticles, leſſons, epiſtles, the goſpel, the prefaces, and the Lord's Prayer were to be ſung; what were the tones, meaſures, notes, moods moſt ſuitable to the majeſty of the church, and moſt proper to inſpire devotion; and he formed that eccleſiaſtical muſic ſo grave and edifying, which at preſent is called the Gregorian muſic. He moreover inſtituted an academy of ſingers for all the clerks to the deaconſhip excluſively, becauſe the deacons were only to be employed in preaching the Goſpel and the diſtributing the alms of the church to the poor; and he would have the ſingers to perfect themſelves in the art of true ſinging according to the notes of his muſic, and to bring their voices to ſing ſweetly and devoutly; which, according to St. Iſidore, is not to be obtained but by faſting and abſtinence: for, ſays he, the ancients faſted the day before they were to ſing, and lived for their ordinary diet upon pulſe, to make their voices clearer and finer; whence it is, that the heathens called thoſe ſingers bean-eaters *. * * * * * However, St. Gregory took care to inſtruct them himſelf, as much a pope as he was, and to teach them to ſing well. Joannes Diaconus ſays, that in his time, this pope's bed was preſerved with great veneration, in the palace of St. John of Lateran, in which he ſung, though ſick, to teach the ſingers; as alſo the whip, wherewith he threatened the young clerks and the ſinging boys, when they were out, and failed in the notes.'

The account given by Johannes Diaconus is ſomewhat more particular than that of Maimbourg, and is to this effect: 'Gregory inſtituted a ſinging ſchool, and built two houſes for the habitation of the ſcholars, and endowed them with ample revenues; one of theſe houſes was near the ſtairs of the church of St. Peter, and the other near the Lateran palace. For many ages after his death, the bed on which he modulated as he lay, and the whip which he uſed to terrify the younger ſcholars, were preſerved with a becoming veneration, together with the authentic antiphonary, above ſaid to have been compiled by him †.'

* 'Pridie quam cantandum erat cibis abſtinebant pſallentes, legumine in cauſa vocis aſſidue utebantur, unde et cantores apud gentiles Fabarii dicti ſunt.' Iſid. de Eccl. Offic. lib. II. cap. xii.

† 'Deinde in domo Domini (Divus Gregorius) more ſapientiſſimi Salamonis propter muſicæ compunctionem dulcedinis, antiphonarium centonem cantorum ſtudioſiſſimus nimis utiliter compilavit. Scholam quoque cantorum, quæ hactenus ejuſdem inſtitutionibus

'bus

Other additions to and improvements of the ſervice are attributed to St. Gregory. It is ſaid, that he added the prayers, particularly this, 'Dieſque noſtros in pace diſponas,' and the Kyrie Eleeſon, and the Alleluia, both which he took from the Greek liturgy; and that he introduced many hymns, and adopted the reſponſaria to the leſſons and goſpels: nay, ſome have gone ſo far as to aſſert that he invented the ſtave. Kircher ſpeaks of a MS. eight hundred years old, which he had ſeen, containing muſic, written on a ſtave of eight lines; but Vincentio Galilei, in his Dialogo della Muſica, ſhews that it was in uſe before Gregory's time †: this is a matter of ſome uncertainty; but the merit of ſubſtituting the Roman letters in the room of the Greek characters, the reformation of the antiphonary, the foundation and endowment of ſeminaries for the ſtudy of muſic and the introduction of four additional tones, are certainly his due; and theſe are the chief particulars which hiſtorians have inſiſted on, to ſhew Gregory's affection for muſic. The augmentation of the tones muſt doubtleſs be conſidered as a great improvement; the tones, as they ſtood adjuſted by Saint Ambroſe, were only four, and are defined by a ſeries of eight ſounds, in the natural or diatonic order of progreſſion, aſcending from D, from E, from F, and from G, in the grave, to the ſame ſounds in the acute.

But before the nature of this improvement can be underſtood, it muſt be premiſed, that although the eccleſiaſtical tones, conſiſting merely of a varied ſucceſſion of tones and ſemitones, in a gradual aſcent from the lower note to its octave, anſwer exactly to the ſeveral

'bus in Sancta Romana Eccleſia modulatur conſtituit; eique cum nonnullis prædiis duo 'habitacula; ſcilicet, alterum ſub gradibus Baſilicæ B. Petri Apoſtoli, alterum verò ſub 'Lateranenſis Eccleſiæ Patriarchii domibus fabricavit; ubi uſque hodie lectus ejus, in 'quo recubans modulabatur, et flagellam ipſius, quo pueris minabatur veneratione con-'grua, cum authentico antiphonario reſervatur.' Johann. Diacon. in Vita Greg. lib. II. cap. vi.

Johannes Diaconus flouriſhed about the year 880; ſo that theſe relics might have been two hundred and ſeventy years old at the time when he wrote the life of Gregory.

† It is worthy of remark, that the muſical ſtave has varied in its limits ſince it was firſt invented. By the paſſage in Galilei above referred to, it ſeems to have been originally contrived to include the ſyſtem of a diapaſon, as containing eight lines; on which only, and not in the ſpaces, the points or notes were originally placed. Guido Aretinus, by making uſe of the ſpaces, reduced it to five lines. After his time, that is to ſay in the thirteenth century, the ſtave was finally ſettled at four lines, in conſequence, it is ſuppoſed, of that correction of the antiphonary of the Ciſtercian order, which St. Bernard undertook and perfected ſome years before; and this number has ever ſince been found ſufficient for the notation of the Cantus Gregorianus.

keys, as they are called by modern muſicians; yet in this reſpect they differ; for in modern compoſitions the key-note is the principal, and the whole of the harmony has a relation to it; but the modes of the church ſuppoſe another note, to which that of the key ſeems to be but ſubordinate, which is termed the Dominant, as prevailing, and being moſt frequently heard of any in the tone; the other, from whence the ſeries aſcends, is called the Final †.

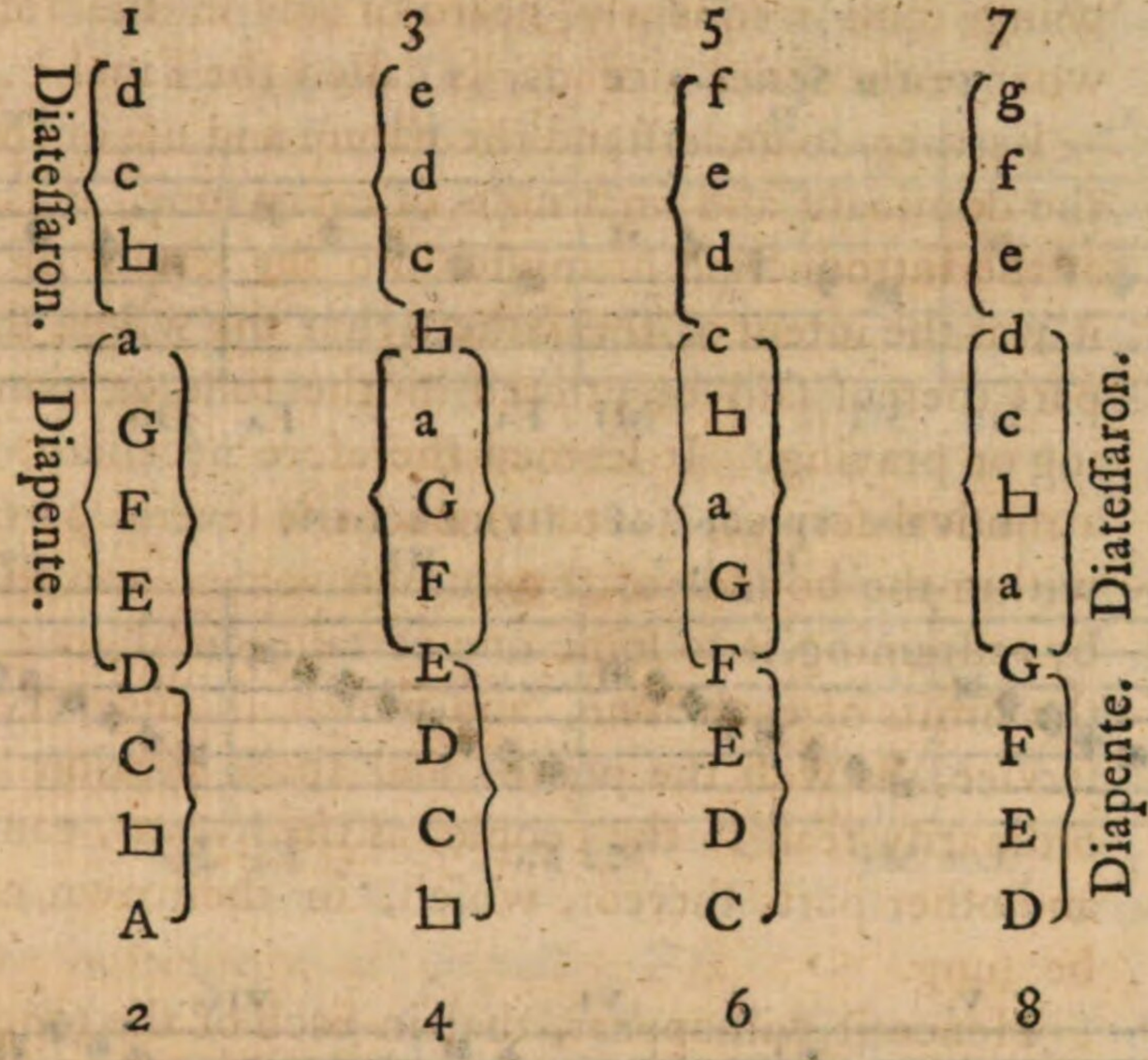
Farther, to underſtand the nature and uſe of this diſtinction between the dominant and final note of every tone, it is to be obſerved, that at the introduction of muſic into the ſervice of the Chriſtian church, it was the intent of the fathers that the whole ſhould be ſung, and no part thereof ſaid or uttered in the tone or manner of ordinary reading or praying. It ſeemed therefore neceſſary, in the inſtitution of a muſical ſervice, ſo to connect the ſeveral parts of it as to keep it within the bounds of the human voice; and this could only be done by reſtraining it to ſome one certain ſound, as a medium for adjuſting the limits of each tone, and which ſhould pervade the whole of the ſervice, as well the pſalms and thoſe portions of ſcripture that were ordinarily read to the people, as the hymns, canticles, ſpiritual ſongs, and other parts thereof, which, in their own nature, were proper to be ſung.

Hence it will appear, that in each of the tones it was neceſſary not only that the concords, as, namely, the fourth, the fifth, and the octave, ſhould be well defined; but that the key-note ſhould ſo predominate as that the ſingers ſhould never be in danger of miſſing the pitch, or departing from the mode in which the ſervice ſhould be directed to be ſung; this diſtinction, therefore, between the dominant and final, muſt have exiſted at the very time of inſtituting the Cantus Ambroſianus, and the ſame prevails at this day.

The characteriſtics of the four primitive modes were theſe: in each of them the diateſſaron was placed above the diapente, which is but one of the two kinds of diviſion of which the diapaſon is ſuſceptible. Gregory was aware of this, and interpoſed four other tones between the four inſtituted by St. Ambroſe, in which the diapente held the uppermoſt place in the diapaſon: in ſhort, the tones of St. Ambroſe ariſe from the arithmetical, and thoſe of St. Gregory from the har-

† Niv. ſur le Chant Gregorien, chap. xii.

monical, diviſion of the diapaſon *. The addition of the four new tones gave riſe to a diſtinction which all the writers on the ſubject have adopted; and accordingly thoſe of the firſt claſs have the epithet of Authentic, and the latter that of Plagal: the following diagram may ſerve to ſhew the difference between the one and the other of them.



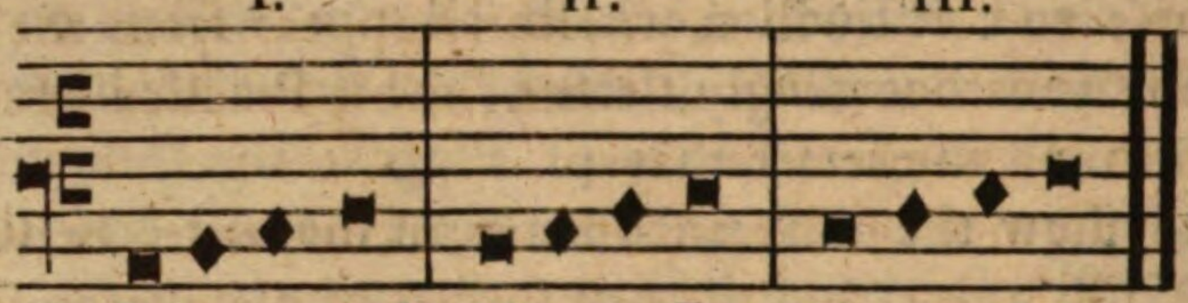
Occaſion has already been taken to remark, that there are three different ſpecies of diateſſaron, and four of diapente; and that from the conjunction of theſe two, there ariſes ſeven ſpecies of diapaſon. Authors have differed in their manner of characteriſing theſe ſeveral ſyſtems, as may be ſeen in Bontempi, who calls the compariſon of them an unprofitable operation †. That of Gaffurius ſeems beſt to correſpond with the notions of thoſe who have written profeſſedly on the Cantus Gregorianus, particularly of Erculeo, who, in his treatiſe, intitled Il Canto Eccleſiaſtico, has thus defined them:

* We have no authentic formula of the tones in muſical characters more ancient than what is to be found in the writings of Franchinus: there is indeed one in MS. in the Britiſh Muſeum, which was part of the Cotton library, Nero, A. xii. 13. beginning 'Si vis 'ſcire artem muſicam;' but the notes, which were written in red ink, are effaced by time.

† Hiſt. Muſ. pag. 177.

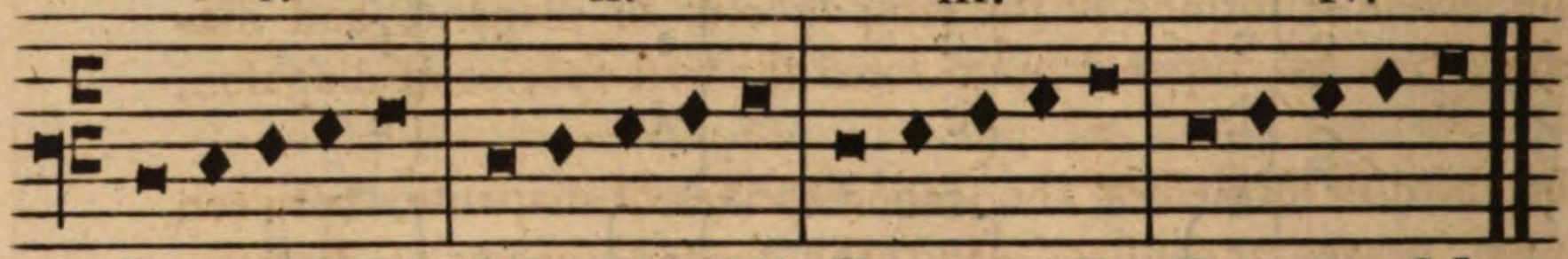
THREE Species of DIATESSARON.

I. II. III.



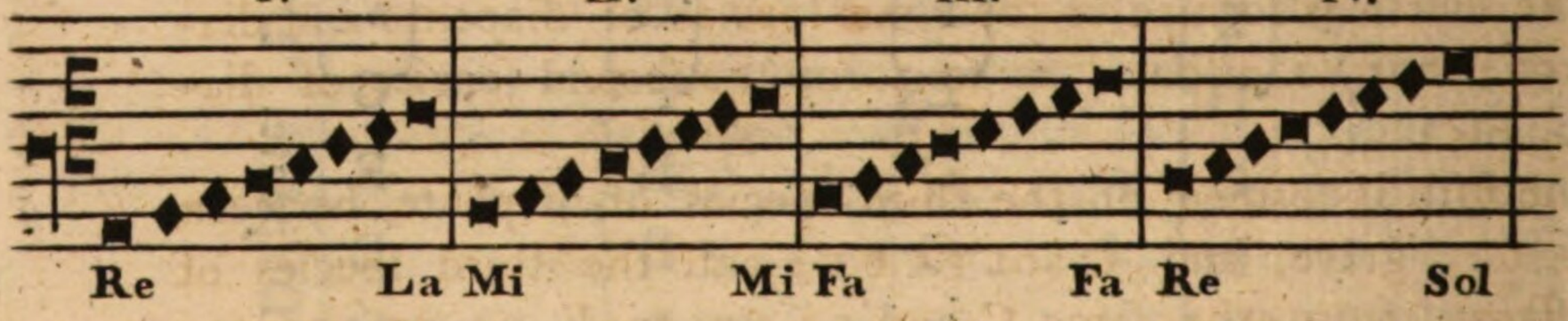
FOUR Species of DIAPENTE.

I. II. III. IV.

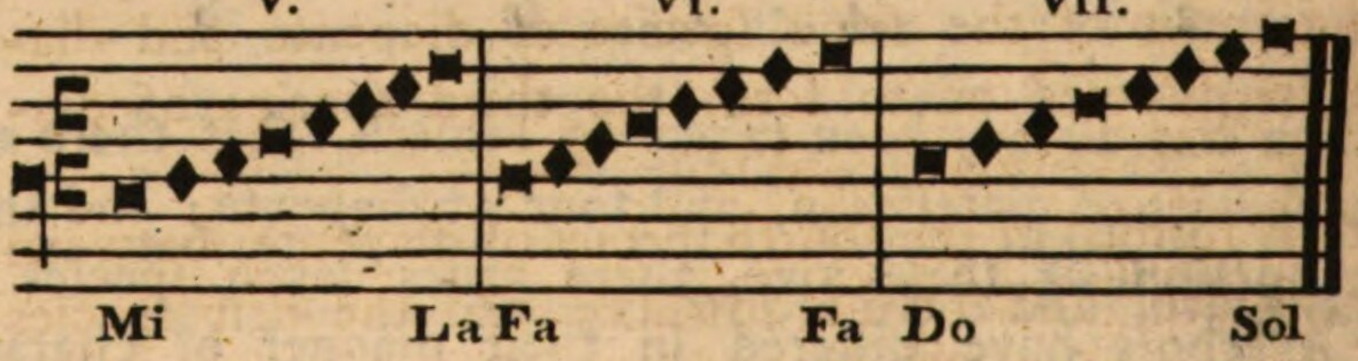


SEVEN Species of DIAPASON.

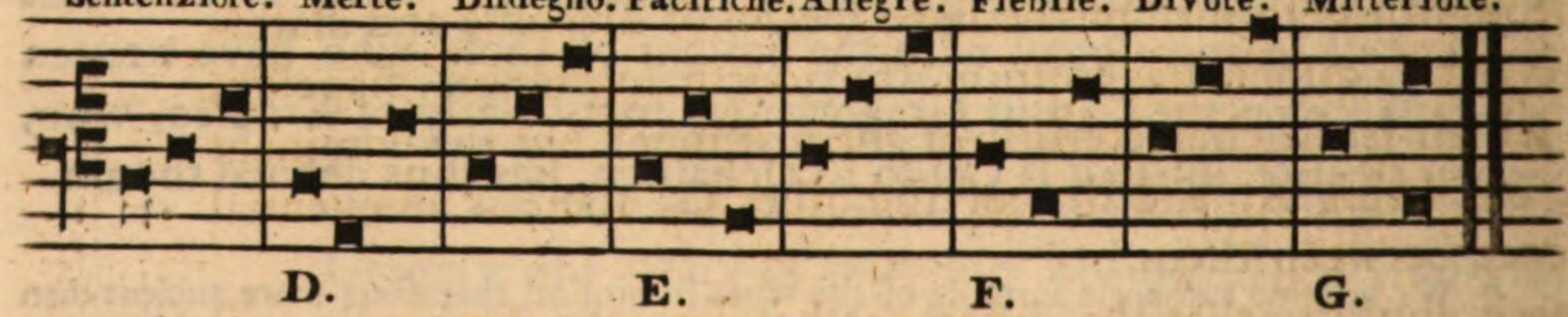
I. II. III. IV.



V. VI. VII.



I. Sentenzioſe. II. Meſte. III. Diſdegno. IV. Pacifiche. V. Allegre. VI. Flebile. VII. Divote. VIII. Miſterioſe.



It now remains to ſhew how the tones correſpond with the ſeven ſpecies of diapaſon; and this will moſt clearly appear from the deſcription which Gaffurius has given of them in his Practica Muſicæ utriuſque Cantus, lib. I. wherein he ſays,

'The firſt tone is formed of the firſt ſpecies of diapente, between 'D SOL RE and A LA MI RE, and the firſt ſpecies of diateſſaron from 'the ſame A LA MI RE to D LA SOL RE in the acute, conſtituting 'the fourth ſpecies of diapaſon, D d.

'The ſecond is formed of the ſame ſpecies of diapente and diateſſaron; but ſo diſpoſed as to form the firſt ſpecies of diapaſon, 'A a.

'The third is formed of the ſecond ſpecies of diapente, between 'E LA MI, grave, and ♮ MI; and the ſecond ſpecies of diateſſaron from the ſame ♮ MI, to E LA MI, acute, conſtituting the 'fifth ſpecies of diapaſon, E e.

'The fourth is formed of the ſame ſpecies of diapente and diateſſaron; but ſo diſpoſed as to form the ſecond ſpecies of diapaſon, ♮♮.

'The fifth is formed of the third ſpecies of diapente, between 'F FA UT, grave, and C SOL FA UT; and the third ſpecies of 'diateſſaron, from the ſame C SOL FA UT to F FA UT, acute; 'conſtituting the ſixth ſpecies of diapaſon, F f.

The ſixth is formed of the ſame ſpecies of diapente and diateſſaron; but ſo diſpoſed as to form the third ſpecies of diapaſon, C c.

'The ſeventh is formed of the fourth ſpecies of diapente, between 'G SOL RE UT, grave, and D LA SOL RE; and the firſt ſpecies 'of diateſſaron from the ſame D LA SOL RE, to G SOL RE UT, acute; 'conſtituting the ſeventh ſpecies of diapaſon, G g.

'The eighth is formed of the ſame ſpecies of diapente and diateſſaron; but ſo diſpoſed as to form the fourth ſpecies of diapaſon, 'D d, which is the characteriſtic of the firſt tone: but the dominant 'of the one being A, and that of the other G, there is an eſſential 'difference between them.'

Hence it appears, that the difference between the Authentic and Plagal Modes, ariſes from the different diviſion of the diapaſon in each; the Authentics being divided in harmonical, and the Plagals in arithmetical proportion. The nature of theſe is fully explained in the treatiſe De Muſica of Boetius, lib. II. cap. xii.; and by Dr. Holder,

Holder, in his treatiſe of the Natural Grounds and Principles of Harmony, chap. v. *

From the principles laid down by the latter of theſe writers †, it will follow, that taking the numbers 12, 9, 8, 6, to expreſs the proportion of the diapaſon, and its component intervals, the diateſſaron and diapente; when the diviſion of the diapaſon is thus, 12, 9, 6, or A D a, giving to the diateſſaron the loweſt poſition, the proportion is arithmetical: When it is 12, 8, 6, or A E a, in which the diapente holds the loweſt place, it is harmonical ‡.

Having adjuſted the number and limits of the tones, Gregory proceeded to the invention of a Cantus, ſuch as he thought would be conſiſtent with the gravity and dignity of the ſervice to which it was to be applied. A plain uniſonous kind of melody, frequently inflected to the concords of its key, ſeemed to him the fitteſt for this purpoſe; and having preſcribed a rule to himſelf, as well as to others, he proceeded to apply to the divine offices that kind of Cantilena which prevails in the Roman church even at this day; and which is known in Italy by the name of Canto Fermo, in France by that of Plain Chant, and in Germany and moſt other countries by that of the Cantus Gregorianus. Cardinal Bona gives this deſcription of it: 'The cantus 'inſtituted by Saint Gregory was plain and uniſonous, proceeding by 'certain limits and bounds of tones, which the muſicians term 'Modes or Tropes, and define by the octonary number, according to 'the natural diſpoſition of the diatonic genus.'

Conſidering that the right underſtanding of the eccleſiaſtical tones is eſſential to the regular performance of choral ſervice, it is not to be wondered at, that almoſt every writer on muſic, who profeſſes to treat the ſubject at large, has taken them under his conſideration; and though it may ſeem, that after they were firſt eſtabliſhed and promulgated through the church, they ceaſed to be an object worthy the attention of theoriſts in muſical ſcience, yet there is no aſſignable period

* See an extract from it, ſupra, chap. v. † Vide Hold. pag. 86.

‡ Malcolm, in his Treatiſe of Muſick, page 162, ſays that the arithmetical diviſion puts the 5th next the leſſer extreme, and the harmonical next the greater, as in the numbers 6, 8, 9, 12, as they certainly do. Again he ſays, page 563, that the harmonical diviſion places the 5th loweſt, which is alſo true; hence it appears that he looks upon the leſſer extreme to be the loweſt poſition, but in this he errs; for if ſix parts give a, twelve muſt give the octave below it, i. e. A. Bontempi is alſo groſsly erroneous in pages 70 and 173, et ſeq. of his hiſtory, and has made ſtrange confuſion, by giving the ſmaller number to the graves, and the larger to the acutes, and in the conſequent miſapplication of the adverbs *ſotto* and *ſopra*.

in

in which it was not neceſſary to review them, and purge them from thoſe errors which the levity and inattention of the ſingers were from time to time, introducing; for, for near a century after Gregory's time, innovations of this kind were ſo frequent, that it ſeemed hardly poſſible to preſerve the Cantus Gregorianus in any degree of purity; and, therefore, the court of Rome was continually troubled with applications from the princes of Europe, expreſſing their fears that the Cantus Gregorianus was in danger of being loſt, and praying its interpoſition in order to its reſtoration.

A more particular account of theſe applications, and the ſucceſs they met with will ſhortly follow; they are mentioned in this place to ſhew that the Cantus Gregorianus was eſteemed a matter of great importance in divine worſhip, and to account in ſome meaſure for the numerous tracts that are extant in the world concerning it.

CHAP. IX.

IN the earlier ages the treatiſes written with a view to preſerve the integrity of the eccleſiaſtical tones, were compoſed in monaſteries: Guido Aretinus, a Benedictine monk, in a tract entitled Micrologus, a very particular account whereof will hereafter be given, has beſtowed three chapters on the explanation of the modes or tropes, which are no other than the eight eccleſiaſtic tones. Many other diſcourſes on the ſame ſubject are alſo extant in manuſcript; and in print they are innumerable.

Of manuſcripts none can pretend to greater authority than the Micrologus of Guido Aretinus, the twelfth, thirteenth, and fourteenth chapters whereof contain a general deſcription of the eight eccleſiaſtical modes, tropes, or tones, but without any diſtinction of their reſpective finals and dominants. In a manuſcript in the library of Baliol college, containing the Micrologus of Guido, and ſeveral other muſical tracts, is a dialogue beginning with theſe words 'Quid eſt Muſica?' in which the tones are treated with a ſomewhat leſs degree of obſcurity; but this alſo is defective in that it contains no Formula to aſcertain the relation between the Dominant and the Final in each of them. But the manuſcript of greateſt value and curioſity, in reſpect of its copiouſneſs and perſpicuity, of any now extant, is

one on vellum with the following title, ‘ Hunc Librum vocitatum ‘ Muſicam Guidonis ſcripſit Dominus Johannes Wylde, quondam ‘ exempti Monaſterii Sancta Crucis de Waltham Præcentor,’ the property of Mr. Weſt now preſident of the Royal Society, and which formerly belonged to Tallys, as appears by his hand-writing on a blank leaf thereof *. In this book, of which a more particular account will be given hereafter, are contained a great number of diſcourſes on the ſubject of muſic, compoſed by ſundry perſons, as namely, the abovementioned Johannes Wylde, Kendale, Johannes Torkeſey, Thomas Walſyngham, Lyonell Power, Chilſton, and others; and among theſe are ſeveral ſhort tracts on the tones or tropes as they are called. The firſt in the book, which ſeems to have been not barely copied, but compoſed by Wylde, is on the ſubject of what he calls Guidonian muſic. It is divided into two parts, the one treating of Manual, i. e. elementary muſic, from the figure of the left hand, which Guido is ſaid to have made uſe of for explaining his ſyſtem; and the other of Tonal muſic, containing the doctrine of the eccleſiaſtical tones.

In the thirteenth chapter of this ſecond part of Wylde's tract it is ſaid that all the tones are produced from the ſeven ſpecies of diapaſon; but as there are eight of the former, and only ſeven of the latter, the author firſt takes upon him to explain how the eighth tone was generated: he ſays that Ptolemy conſidered the ſeventh ſpecies as produced from the third, and thought that the fourth was alſo capable of producing another tone, which he added to the ſeven, making thereby an eighth: he adds, that he diſpoſed one after another, the fifteen letters, which comprehended the biſdiapaſon; conſtituting A for the firſt note thereof, and P for the laſt; and having drawn ſeven ſemicircles, which pointed out ſeven ſpecies or tones, he added the eighth, extending from the middle letter □ or H to the laſt letter P, which was the only eighth that wanted a ſemicircle;

* This manuſcript paſt through the hands of Morley, and was of great uſe to him in the annotations on his Introduction: many years after his death it had for its owner Mr. Powle, ſpeaker of the houſe of commons in the reign of king William; from him it came to lord Somers; and after his deceaſe to Sir Joſeph Jekyll, at an auction of whoſe books it was bought by a country organiſt, and he in gratitude for ſome kindneſſes done him, preſt the acceptance of it on its preſent worthy poſſeſſor. A copy of it was found in the library of Dr. Pepuſch upon his deceaſe, but it is from the original that this and the ſubſequent extracts from it are taken.

point-

pointing out thereby the fourth ſpecies, which has its mediation in G, in which the eighth tone is terminated: and this, ſays he, Boetius aſſerted to be the eighth mode or tone which Ptolemy ſuperadded. The ſame author obſerves that though the ſpecies are Eight, yet the genera of tones are in truth but Four, each being divided into authentic and plagal; and that each genus is by ſome writers termed a Maniera, which appellation he rejects, as coming from the French. He ſays that no cantus in any of the tones can with propriety exceed the limits of a tenth; and ſo indeed do all the writers on this ſubject *.

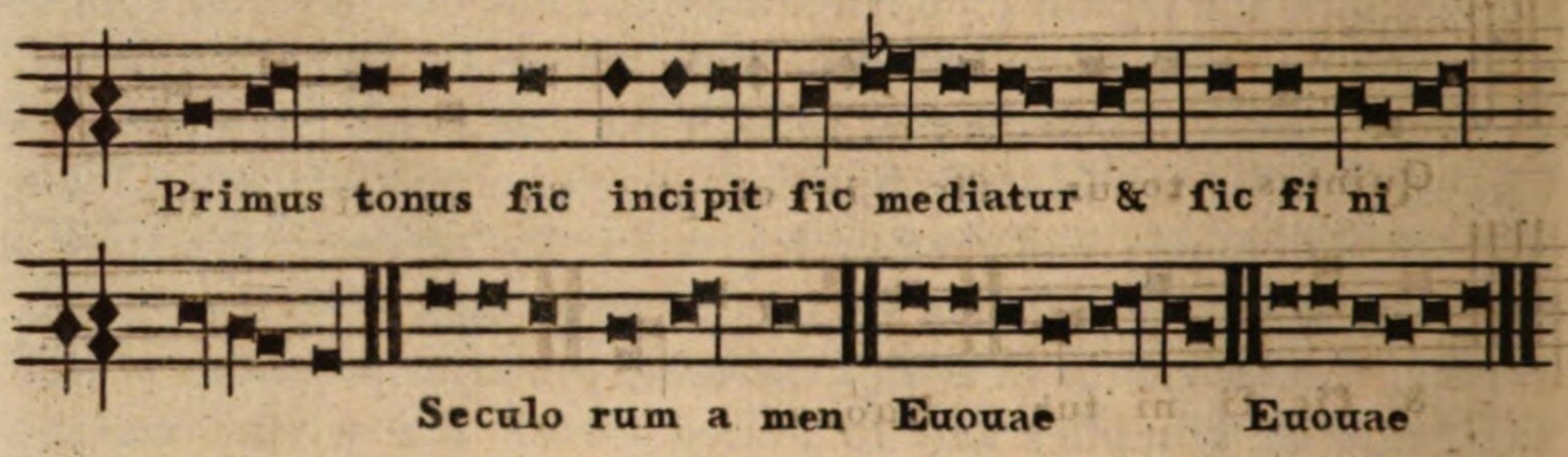
In the ſame manuſcript are ſeveral other tracts, one in particular compoſed by a certain monk of Sherborne, in metre, tending to explain the precepts of what was then called tonal muſic.

Many other manuſcripts on this ſubject there are, which, by the aſſiſtance of the printed catalogues may be found; but as a compariſon of the ſeveral definitions therein contained, might introduce a degree of confuſion which no diligent enquirer would wiſh to encounter, it is ſafeſt to rely on thoſe authors who have written ſince the invention of printing, and whoſe works have ſtood the teſt of ages.

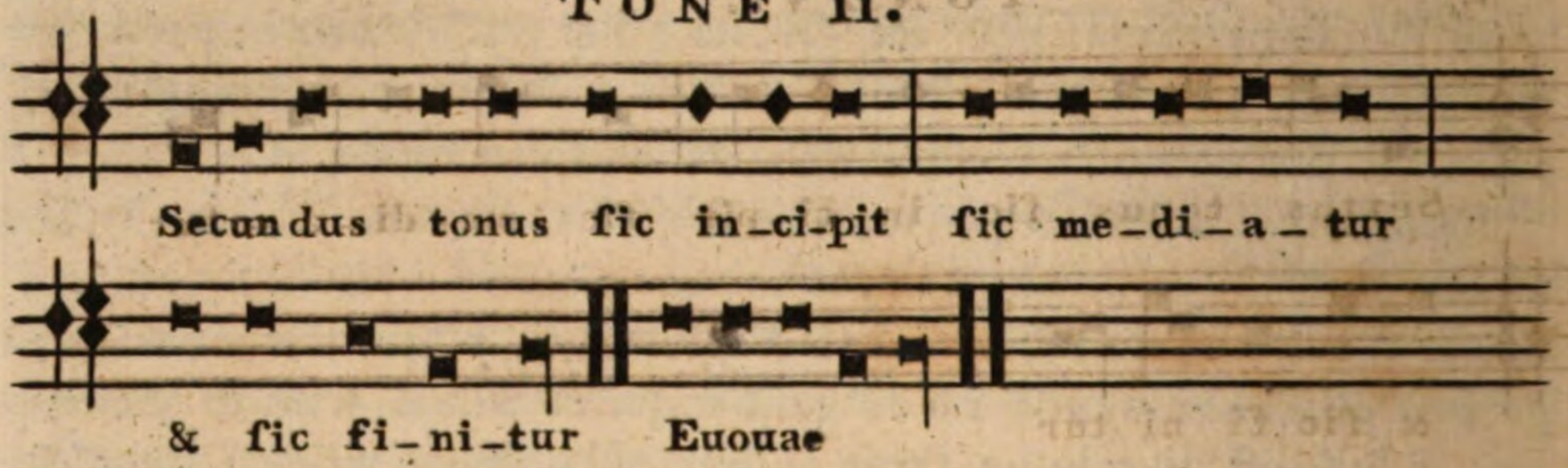
Of theſe Gaffurius, as he is of the greateſt antiquity, ſo is he of unqueſtionable authority. In his book intitled Practica Muſicæ utriuſque Cantus, printed in the year 1502, he has entered into a large diſcuſſion of the eccleſiaſtical tones, and has exhibited them ſeverally in the following forms.

* This rule muſt be underſtood as referring only to that uniſonous cantus which is uſed in the intonation of the pſalms and other parts of the ſervice, and not to that of the antiphons and hymns; for to theſe a double, triple, and frequently a quadruple cantus is adapted; and in theſe the interior parts have often anomalous initials and finals; and in the extreme parts the ambit of the grave and acute ſounds will often neceſſarily exceed the interval of a tenth.

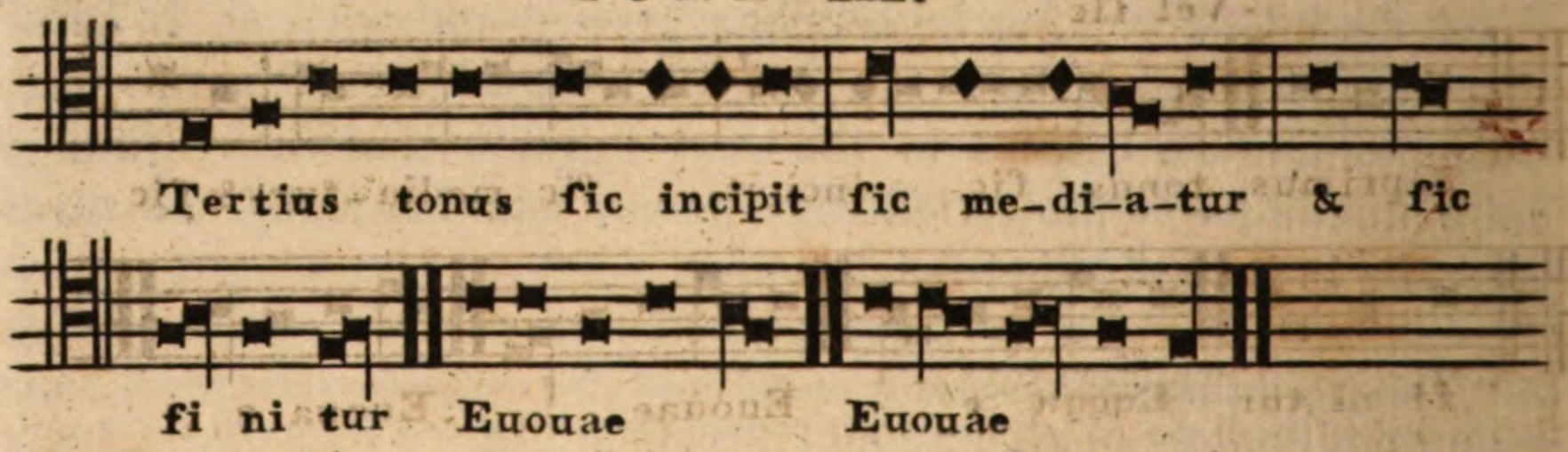
TONE I.



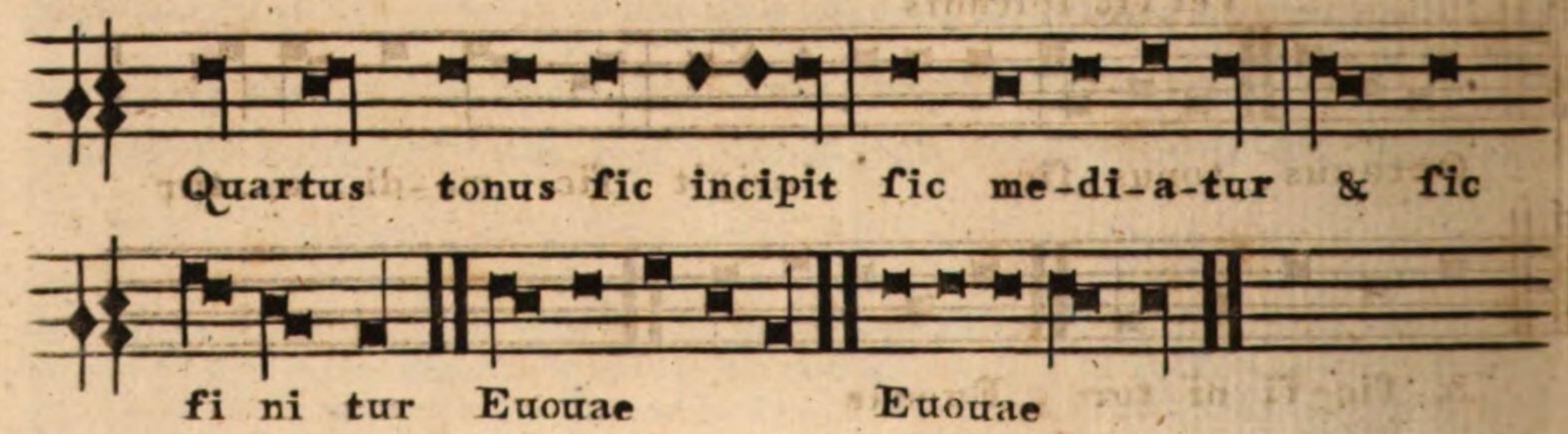
TONE II.

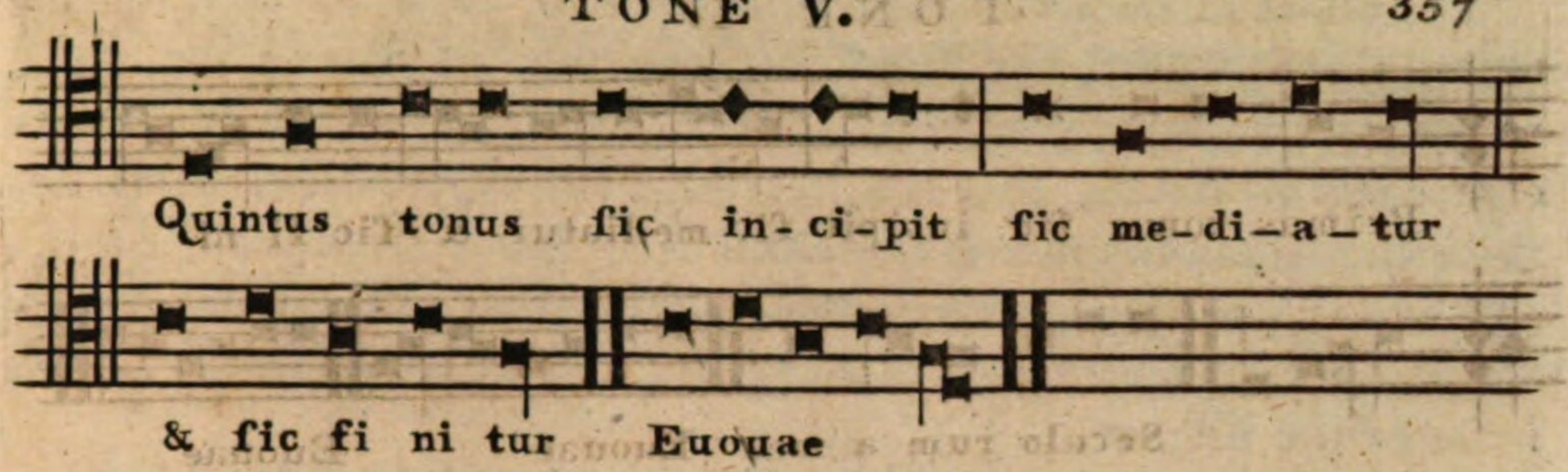


TONE III.

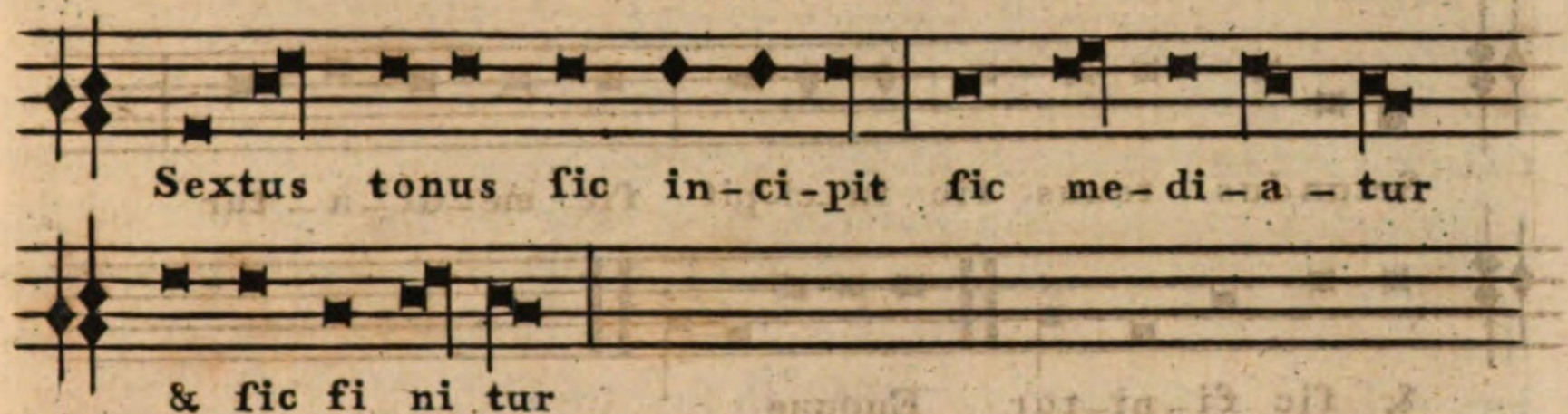


TONE IV.

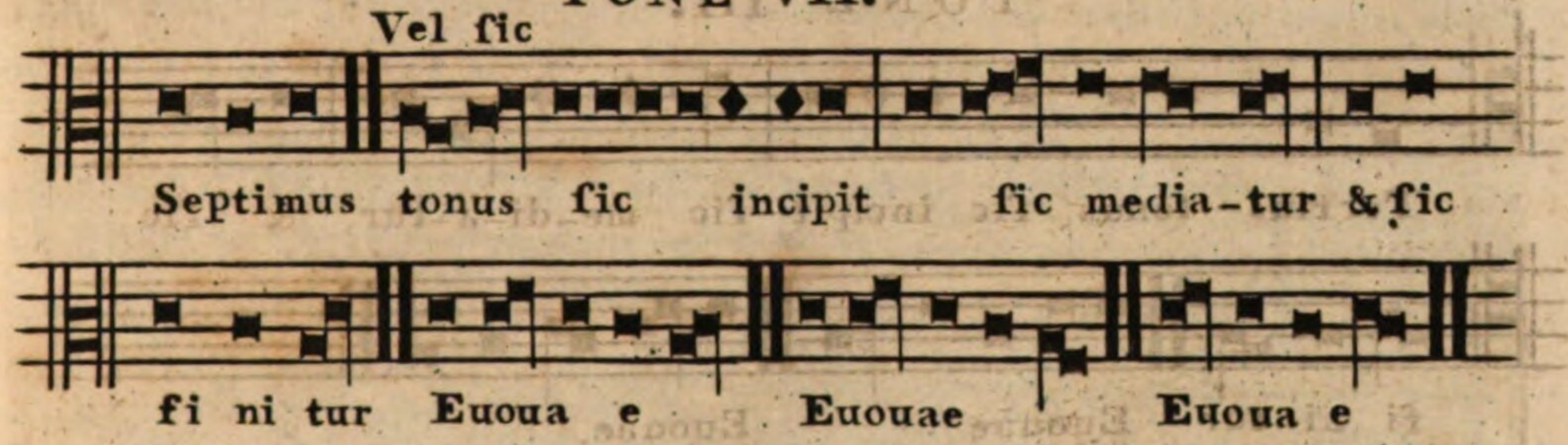




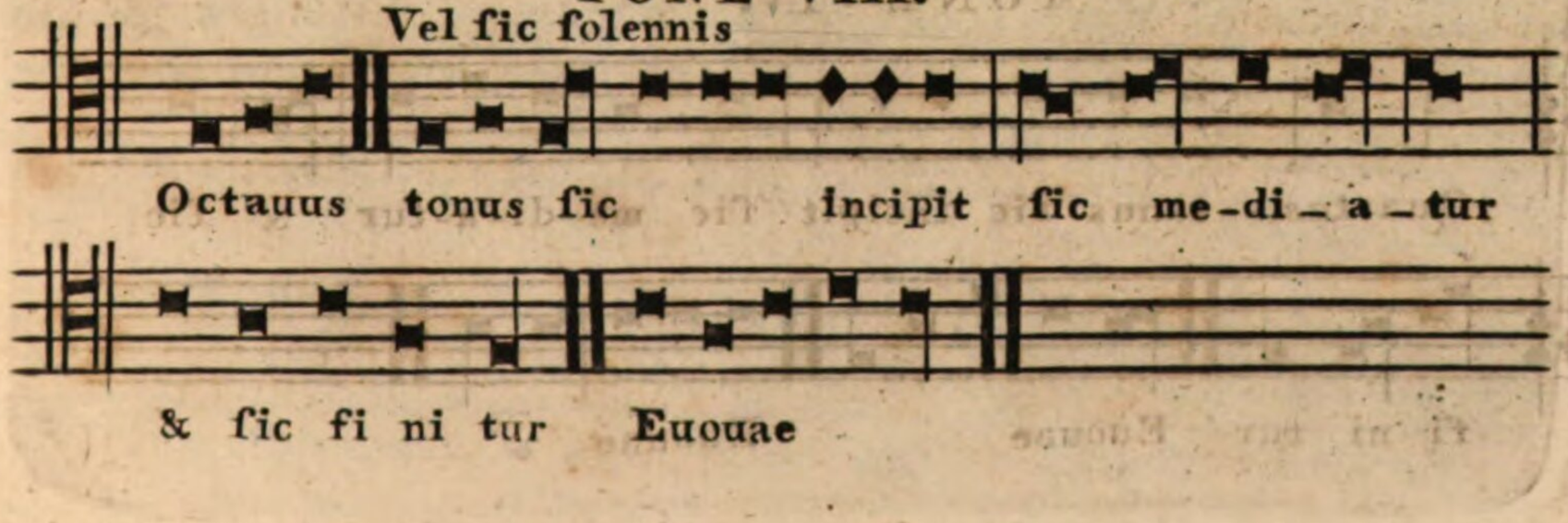
TONE VI.



TONE VII.



TONE VIII.



The above characters exhibit the eſſential parts of each of the tones, that is to ſay, the beginning, the mediation, and the cloſe, which is generally contained in the Euouae, a word, or rather a compages of letters, that requires but little explanation, being nothing more than the vowels contained in the words Seculorum Amen; and which whenever it occurs, as it does almoſt in every page of the antiphonary, is meant as a direction for ſinging thoſe words to the notes of the Euouae.

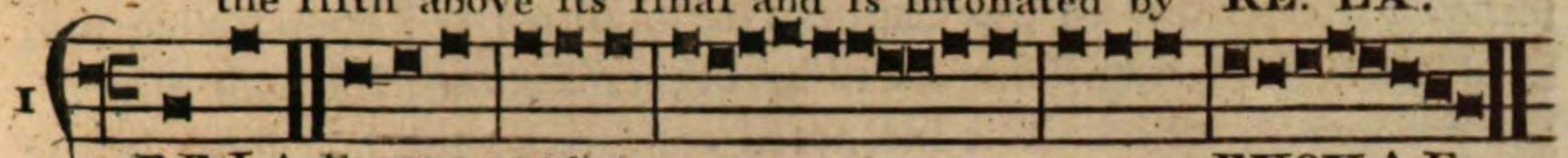
From Gaffurius the tones have been continued down to this time, through all the books that have been written on the ſubject of muſic at large, in almoſt every country in Europe. Of thoſe written profeſſedly on the eccleſiaſtical tones, there are two that merit a particular attention, the one entitled Armonia Gregoriana, by Gerolamo Cantone, Maſter of the Novices, and vicar of the convent of St. Francis, at Turin, publiſhed in 1678, oblong quarto. The other has the title of Il Canto Eccleſiaſtico, the author D. Marzio Erculeo, printed at Modena in 1686, in ſmall folio.

The firſt of theſe books contains the rudiments of ſinging, and the moſt important rules for the Canto Fermo, which for the moſt part are comprized in ſhort memorial verſes. The author has given a brief deſignation of the eight tones, but in his twenty-ſecond chapter, entitled De' Toni Miſti, he has aſſumed a licence which ſeems unwarranted by any precedent, at leaſt in ancient practice, of combining together the firſt and ſecond, the third and fourth, the fifth and ſixth, and the ſeventh and eighth tones, and thereby exceeded the limits preſcribed by the ancient writers, who all concur in reſtraining the canto fermo to the ambit of a tenth.

The latter of theſe books gives very ample directions for the ſinging of all the offices in the Roman ſervice, and a repreſentation of the tones in the following order.

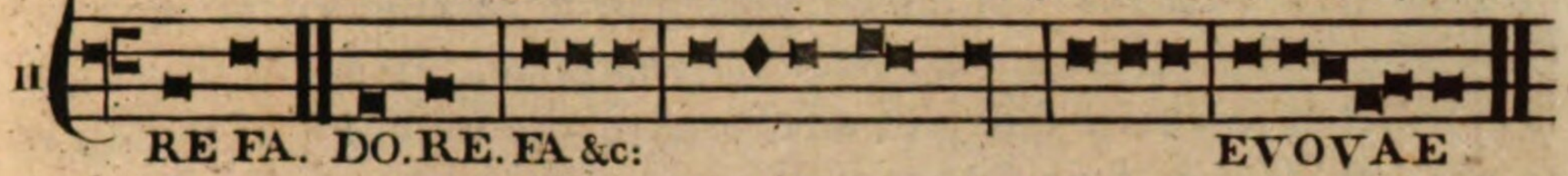
The firſt Tone has its final in D. and its dominant in A. the fifth above its final and is intonated by RE. LA.

I D



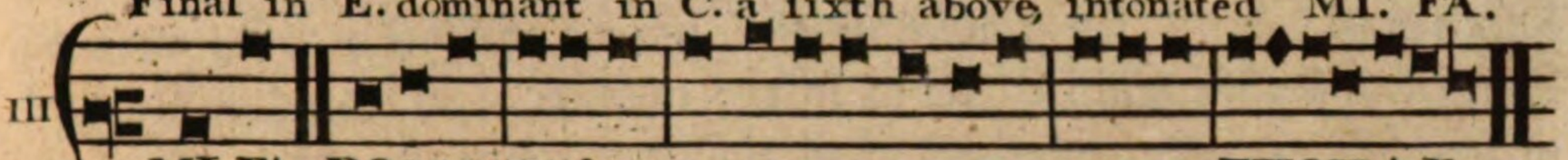
Final in D. dominant in F. a third above; intonated RE. FA.

II



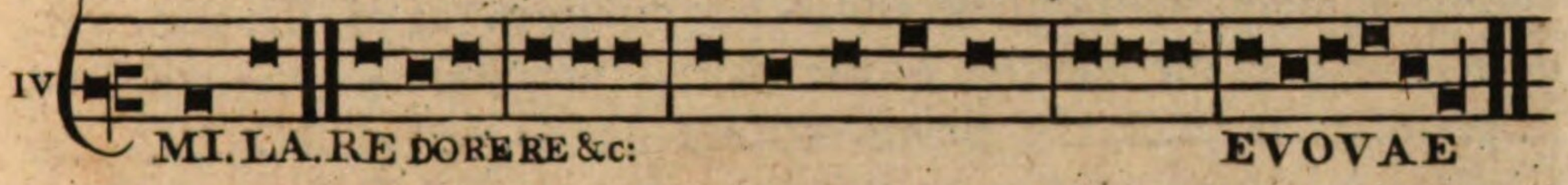
Final in E. dominant in C. a ſixth above, intonated MI. FA.

III E



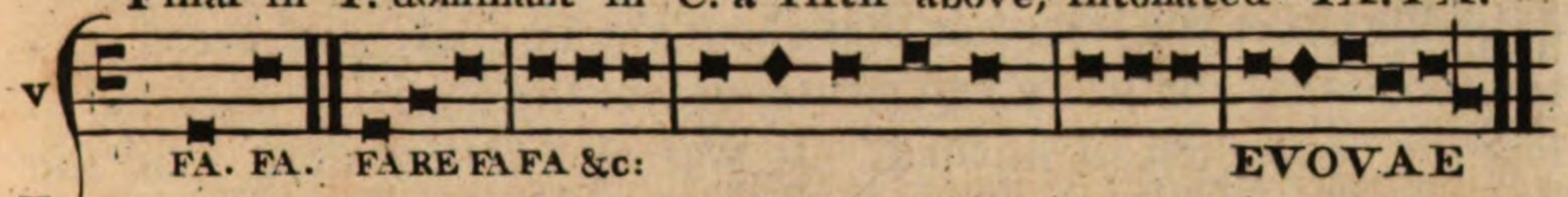
Final in E. dominant in A. a fourth above; intonated MI. FA.

IV



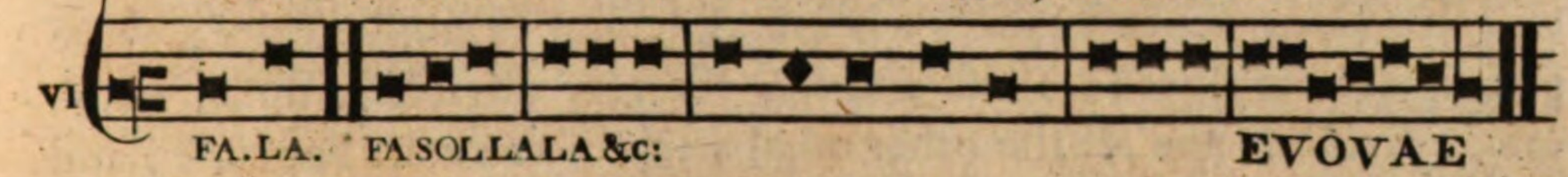
Final in F. dominant in C. a fifth above; intonated FA. FA.

V F



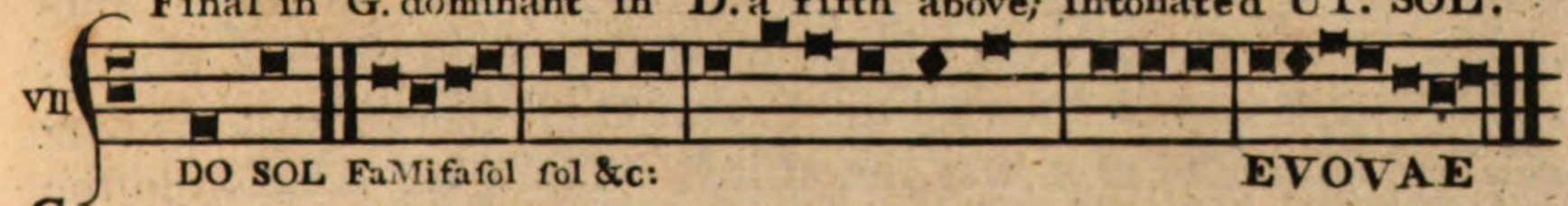
Final in F. dominant in A. a third above; intonated FA. LA.

VI



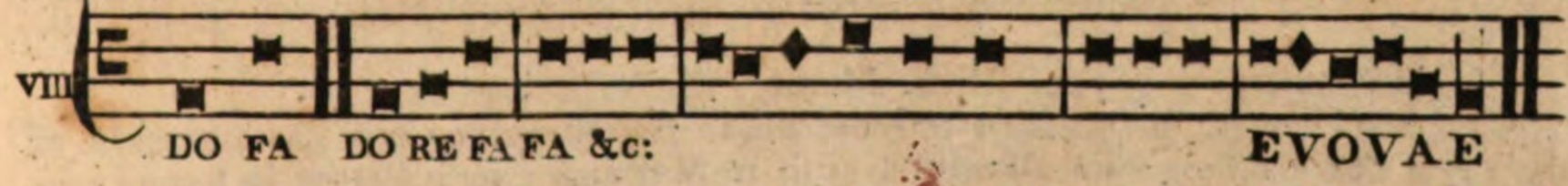
Final in G. dominant in D. a fifth above; intonated UT. SOL.

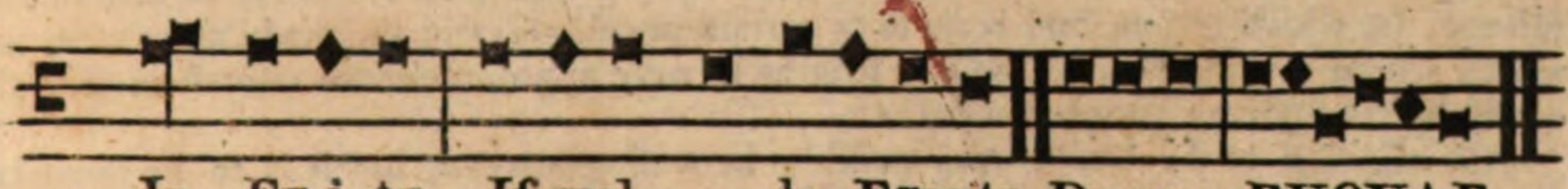
VII G



Final in G. dominant in C. a fourth above; intonated DO. FA.

VIII





In Ex-i-tu If-rael de Egypto Domus EVOVAE

There is alſo another tone uſed in the Romiſh ſervice, called by ſome of the writers on the Cantus Gregorianus, Il Tuono Pellegrino, i. e. the Wandering Tone; and by others Tuono Miſto, or mixed; the manner in which it is intonated appears by the laſt ſtave in the preceding plate.

The writers on the Cantus Gregorianus have aſſigned to each of the eight eccleſiaſtical tones a peculiar character, ſuppoſing that each is calculated to excite different affections of the mind: this notion is to the laſt degree fanciful, as will appear from what Bontempi and Kircher ſeverally ſay touching the power and efficacy of each *. Erculeo has diſtinguiſhed them in the manner repreſented at the end of his ſcheme of the ſpecies of diateſſaron, diapente, and diapaſon, herein before inſerted †.

The conſequence of theſe and other publications of the ſame import, was that the doctrine of the Cantus Gregorianus was rendered ſo perſpicuous, and the forms of the tones ſo well eſtabliſhed, that they became familiar even to children; but the ſtability they had acquired was not ſo great, but that about the beginning of the ſeventeenth century the levity and wantonneſs of the ſingers gave reaſon to fear the corruption of them ‡. It was about this time that the theatric ſtyle of muſic began to be formed, in the performance whereof Caſtrati, and others with flexible and extenſive voices, were principally employed; theſe ſingers, for very obvious reaſons, made uſe of diviſions and all the other uſual artifices to excite applauſe; and theſe were ſo grateful to the ears of the vulgar, that the ſingers employed in the choral ſervice became infected with the like paſſion, and ſo mutilated and diſtorted the Cantus Gregorianus, that the dignity and ſimplicity of it was almoſt loſt. This gave occaſion in the year 1683 to an excellent French muſician, Guillaume Gabriel

* Vide Bontemp. pag. 241. Kirch. Muſurg. lib. VIII. pag. 142.

† Doctor Pepuſch, in his ſhort Introduction to Harmony, pag. 65, has remarked of the key E that it differs from all others, as in truth it does; for it has for its ſecond a ſemitone, for which reaſon, and becauſe of certain peculiarities in the modulation of it, and which render it very ſolemn; he ſays it is as it were appropriated to church-muſic, and called by the Italians Tuono di Chieſa.

This aſſertion of the Doctor may poſſibly be well grounded, but it is to be remarked that no ſuch diſtinction occurs in the writings of Guido or Franchinus, or any of the other authors who have been conſulted in the courſe of this work, for the purpoſe of explaining the Cantus Gregorianus, and the nature of the eccleſiaſtical tones.

‡ Erculeo, pag. 52.

Nivers, organiſt of the chapel of Lewis XIV. and maſter of muſic to his queen *, to publiſh a book entitled Diſſertation ſur le Chant Gregorien. In the compoſition of this learned and judicious work, the author appears to have derived great aſſiſtance from the writings of Amalarius Fortunatus and St. Bernard, and from Cardinal Bona's book De Rebus Liturgicis, Durandus's Rationale Divinorum Officiorum, and, above all, from a more modern author, named Peytat, who wrote a hiſtory of the chapel of the king of France, a book abounding with a great variety of curious particulars.

Nivers ſucceeded ſo well in his endeavours to reform the cantus eccleſiaſticus, that he was employed by the king to correct the Roman antiphonary, for the uſe of the churches in France; and the editions of that great volume ſince his time, bear teſtimony to the ſkill and induſtry which he muſt have exerciſed in ſo laborious and important a reformation. In ſhort, he has not only reduced the tones to the ſtandard of primitive purity, but has given ſuch directions for the performance of the Cantus Gregorianus, and guarded ſo well againſt innovations in it, that there is very little reaſon to fear the loſs of this precious relic of antiquity.

* Nivers was alſo organiſt of the church of St. Sulpice, in Paris. He was the author of a book, entitled, Traite de la Compoſition de Muſique, printed at Amſterdam, in octavo, 1697, and of ſome motets and pieces for the organ, which are alſo in print.

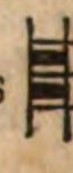
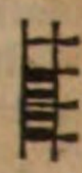
A GENERAL HISTORY OF THE SCIENCE and PRACTICE OF MUSIC.

BOOK IV. CHAP. I.

THE first eight chapters of Nivers's Dissertation sur le Chant Gregorien, contain a history of the primitive institution of it, and a vindication of the practice of antiphonal singing in general, from Socrates, Theodoret, and other ecclesiastical writers, with answers to the objections of such as either denied its authority or had contributed to the increase of those errors in the practice of it which it is the purpose of his book to detect and reform.

In the ninth chapter the author enumerates the several characters necessary in the notation of it, and describes them thus:

'Twelve characters are sufficient for the plain-song; the first consists of four lines, upon which, and in the spaces between them, all the notes are situate; the fifth line, which certain innovators have added, is useless and embarassing.

'The second character is the key of C SOL UT FA, or else by the method of the SI; the key of C SOL UT made thus  or thus  cannot be situate but on the first, the second, or the third, and never or very rarely on the fourth, because the key on the second line with a b soft commonly in B, has altogether the same effect as the same key on the fourth line without b soft; for it is always said the note on this fourth line is always sung UT, and the other notes,

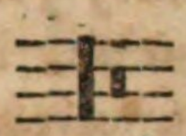
'notes conſecutively in order. This is to be underſtood of the ſong,
'but not of the organ or other inſtruments.

'The third character is the key of F UT FA, made thus or

'thus which is generally ſituated on the ſecond line, and ſome-
'time, but very rarely, upon the firſt.

'The fourth and fifth characters are the two notes, the long and
'the breve, made thus ■ ◆, but as the number of characters neceſ-
'ſary in it is one of the grand queſtions relating to the cantus, we
'defer ſpeaking of it till in the next chapter, to confute the opinion
'of thoſe who admit but one of them, namely, the long *.

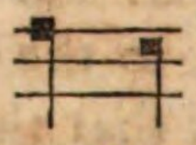
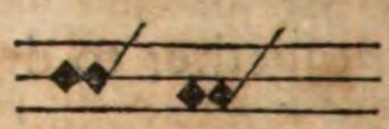
'The ſixth and ſeventh characters are the two bars; the great and

'the leſs, made thus  which are uſed to denote the place
'where all the choir together ought to take breath and make
'a little pauſe. Theſe are the ſame in a ſong as ſtops are to words,
'wherefore we always at two points or a colon, and ſometimes at
'commas, put a great bar to make the ſong complete, anſwering to
'a full ſtop. The principal uſe of the leſſer bar is to give time for
'the whole choir together to draw breath, to the end that none of the
'ſingers may go on faſter than the reſt, and that the uniformity of the
'cantus may be preſerved by all, and in all with an equal meaſure.
'At the end of every piece there are put two great bars to mark the end
'of the ſong; theſe bars are the moſt efficacious contrivance that can

* Nivers, in the ſubſequent chapter, undertakes the diſcuſſion of a queſtion which it ſeems had ſubſiſted for a long time, namely, how many characters or marks of time were neceſſary in the cantus eccleſiaſticus? He contends that no more than two, namely, the long and the breve, are admiſſable into it; for this he cites the acts of the council of Rheims in 1564, in which it was decreed that the cantus ſhould contain but one note on a ſyllable, and that the quantities of each ſhould be obſerved in the notation. He ſeems to think that this was the very reformation intended by the council of Trent, in that decree of it which is mentioned by Father Paul, pag. 559. of his hiſtory, to have been made in 1562, againſt over-curious and wanton ſinging. He alſo cites Rabanus Maurus to prove that all clerks ſhould perfectly underſtand the nature of the accents, and accommodate their notation to it. Farther he aſſerts, on the authority of Radulphus, that in the gradual of the bleſſed Gregory at Rome there are but few notes, and that there is reaſon to believe that many characters in thoſe of an hundred years after him have no warrant for their admiſſion.

In the courſe of this diſquiſition Nivers ſeems not to be in the leaſt aware of a reformation of the cantus eccleſiaſticus made by Paleſtrina and Franceſco Suriano, about the year 1580, which conſiſted in the reduction of the characters to three, namely, the long, the breve, and the ſemibreve; and is expreſsly mentioned by Marzio Erculeo, in his Diſcourſe on the Cantus Eccleſiaſticus above-cited.

'be thought on to remedy all the cacophonies and contrarieties 'the voices of the ſingers, who, without them, could not gueſs 'when to reſt; but the abuſe of theſe bars is become almoſt general, 'for the markers or writers of notes and the printers imagine 'there muſt be one at every word; ſo that if there are four, five, ſix, or 'ſeven monoſyllables following one another, they put as many bars 'as there are notes, as if all the notes were not of themſelves as well 'ſeparated, without bars, as the words are. St. Bernard ſpeaks of 'this confuſion in theſe words: "What ſort of liberty is this "which introduces the confuſion of uncertainty, &c." And in effect 'this confuſion of bars is of no ſervice, ſince all the notes are of 'themſelves as diſtinct as the words; and all theſe bars are not 'only uſeleſs and embarraſſing, but they yet (which is remarkable) 'deſtroy the benefit of their inſtitution, becauſe the ſingers, no 'longer knowing where to repoſe themſelves, ſome ſtop while others 'advance, which occaſions the greateſt diſorders in the ſong; and the 'exceſs of bars puts the ſong again into its former abuſe, when it 'had no bars, which we ſee in the more ancient manuſcripts.

'The eighth character is the guidon, made upon the line, or 'in the ſpace thus  * or thus  to mark where 'the following note will be ſituate in the other line.

'The ninth character is the bemol, made thus in a ſpace, but 'rarely on a line which is always marked in B, and very rarely 'in E.

'The tenth is the point • between two ſhort notes: the uſe of it is 'to augment the precedent one, and diminiſh that following it, to ob- 'ſerve a certain regulated meaſure, for example, that of two times. 'Sometimes the point is alſo put between a long note and a ſhort 'one; and in ſuch caſe it only augments the long note with the half 'of its own value, ſo that the point and the following breve con- 'ſidered together complete the juſt meaſure of a long note.

'The eleventh character is the bond or joining, made thus ⌣, 'or thus ⁀, which ſerves to tie two or more notes, or long ones and 'breves on one and the ſame ſyllable, to keep the regulated meaſure,

* This is the form of the guidon in ancient miſſals, and other books written or printed with muſical notes: it is an indication of the firſt note in a ſucceeding ſtave, and is that note in a ſmaller character. This kind of guidon is now diſuſed, and has given place to that other above deſcribed.

'The

'The laſt character is the dieſis, made thus ※, or thus x; the uſe 'of it is to ſoften the following note, or that above or under which it 'is placed; the dieſes are rarely marked in the plain-ſong, becauſe 'the voice itſelf naturally leads to it *.

Having thus explained the characters, Nivers, in his twelfth book, proceeds to a diſcrimination of the tones by the finals and dominants of each in their reſpective order, in the words following:

'The firſt has its final in D, and its dominant in A, the fifth to 'its final; RE LA.'

* The following directions of Nivers contain the principal rules to be obſerved in the performance of the cantus eccleſiaſticus.

'To begin to ſing or intonate an anthem, or any other part of the office whatſoever, 'the rule is to attend particularly to the dominant of the choir, which ought to be regu-'lated according to the voices which compoſe it; for it would be acting quite contrary to 'nature and reaſon to pretend to eſtabliſh the ſame dominant for the low, the middle, and 'the higheſt voices.

'To arrive at a perfect knowledge of theſe things, it ought to be known that the whole 'ſong conſiſts in eight modes or tones, which may be reduced to four by their finals, and 'even to two, by only the difference of the greater third and the leſſer third.

'The uneven tones, which are only ſo termed, as being diſtinguiſhed by the odd num-'bers 1, 3, 5, 7, are called authentics or principals: the others are named plagals or de-'pendents, becauſe they have one and the ſame final each with their authentic, and thus 'the firſt and ſecond have one and the ſame final, ſo the third and fourth, the fifth and 'ſixth, the ſeventh and eighth; all their difference conſiſts only in the extent, which in 'the authentics is above, and in the plagals below.

'Every tone has two eſſential chords, called the final and the dominant, upon which all 'ſorts of ſongs turn and are founded. The final is that by which the tone ought for the moſt 'part to begin, but always to end The dominant is that which rules or prevails the often-'eſt in the ſong, and upon which the tenor of the pſalms, oraiſons, and all that is to be 'be ſung ſtrait forward, or nearly ſtrait forward, is made. Wherefore this dominant 'ought to be a little higher than the middle of the natural voice, and not lower, becauſe 'that in all the tones the extent of the notes is greater below than above the dominant; 'but it is not a ſmall difficulty to take it juſt and in a good pitch.

'For the common and ordinary voices they put the dominant of the choir in A of the 'organ; I mean the organs which have the tone of the king's chapel, which all the famous 'organs of Paris and elſewhere have, wherefore this tone is called the tone of the chapel, 'to diſtinguiſh it from the tone of the king's chamber, which is a ſemitone higher, and 'ſo commonly are, or ought to be, the organs in nunneries; the nuns having generally 'an extent of voice higher by an octave than the common voices of men.

'For the low voices they put the dominant in G of the organ.

'For the high voices they put the dominant in B of the organ.

'For the voices of religious women they put the dominant in C, or even in D of the 'organ, according to the quality of the voices.

'The firſt thing therefore that ought to be known is the dominant of the choir, which 'is only a generical ſound, or tone if you will, and not fixed to any note or degree, that 'is to any rule or interval on which this dominant can be placed.

'The ſecond thing to be obſerved is the mode or tone of the anthem which is to be 'ſung, and to regulate the dominant of the anthem to the uniſon of the dominant of the 'choir which performs it, and then to proceed from this dominant regularly, and paſs

'through

'The ſecond has its final in D, and its dominant in F, a third to 'its final; RE FA.'

'The third has its final in E, and its dominant in C, a ſixth to its 'final; MI UT *.'

'The fourth has its final in E, and its dominant in A, a fourth to 'its final; MI LA.'

'The fifth has its final in F, and its dominant in C, a fifth to its 'final; UT SOL, or elſe FA UT with B ♭, not b.'

'The ſixth has its final in F, and its dominant in A, a third to 'its final; UT MI, or elſe FA LA, with B ♭, not b.'

'The ſeventh has its final in G, and its dominant in A, a fifth 'to its final; SOL RE.'

'The eighth has its final in G, and its dominant in C, a fourth to 'its final; SOL UT.'

The diſſertation of Nivers contains alſo Formulæ Cantus Ordinarii Officii Divini. Theſe he has given in Latin, together with the muſical notes: they contain directions for ſinging the oraiſons and reſponſes, and for reading the prophets, the epiſtles, and goſpels, and for the intonation of the pſalms. There are alſo ſeveral litanies and antiphons, and that famous lamentation of the Virgin, in monkiſh rhyme,

Stabat mater doloroſa
Juxta crucem lachrymoſa.

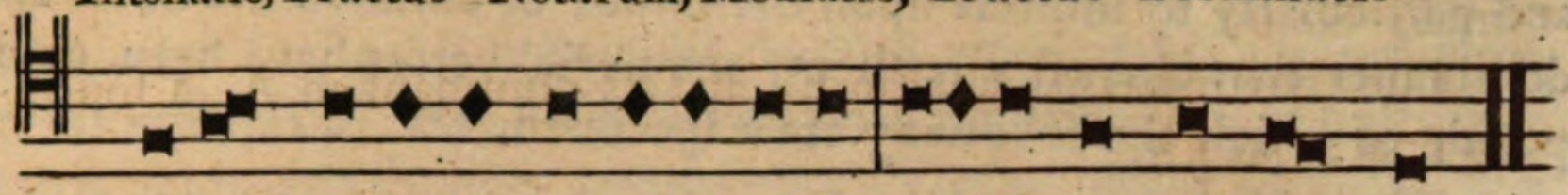
The formula of the tones intitled Tabula tonorum, is alſo given in muſical characters, and contains the following examples:

'through all the degrees as far as the note by which the anthem ought to begin; for ex-'ample, if I would intonate the firſt anthem of the Feaſt of the Holy Sacrament, "Sa-"cerdos in æternum," I ſing ſlowly the dominant of this anthem, which is LA, 'to the uniſon of the dominant of the choir, and deſcend by degrees to the final 'of the anthem, by which it begins, ſinging LA, SOL, FA, MI, RE, to find the 'juſt tone of the firſt note of the ſaid anthem, "Sacerdos in æternum," and after the 'ſame manner in other anthems and tones. But one ſhould not be ignorant of the eſſen-'tial chords of every tone.'

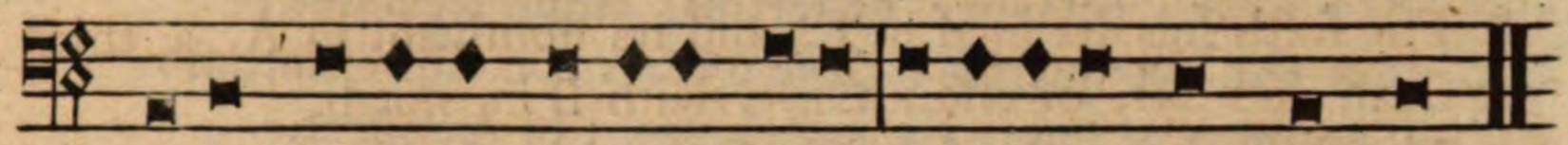
It ſhould ſeem by theſe ſeveral tracts of Erculeo and Nivers, and other authors who might be named, that the doctrine of the tones is now ſo well eſtabliſhed, that there is not the leaſt reaſon to fear any corruption of them. In England the little book entitled A pious Aſſociation, publiſhed for the inſtruction of perſons of the Romiſh perſuaſion in the true church plain-ſong, contains a formula of the eight tones, exactly correſponding with that of Nivers above given; and it farther appears, that in the ſeminaries throughout Italy it is taught to children in a way that admits of no variation. In ſhort, its principles ſeem to be as well underſtood as thoſe of arithmetic, or any other mathematical ſcience.

* According to the French method of ſolmiſation; but Erculeo makes it LA.

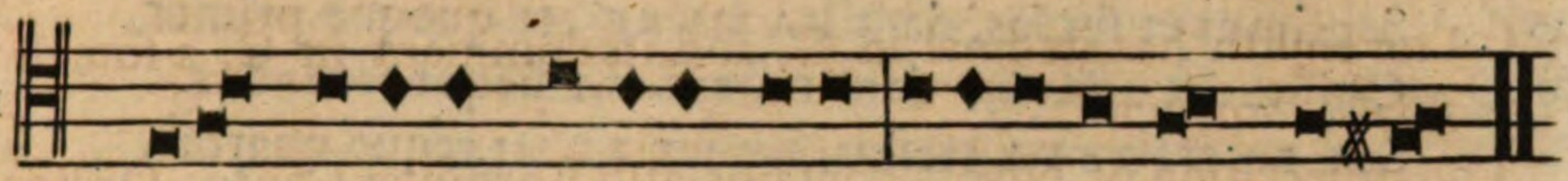
Intonatio; Tractus Notarum; Mediatio; Tractus Terminatio

I 

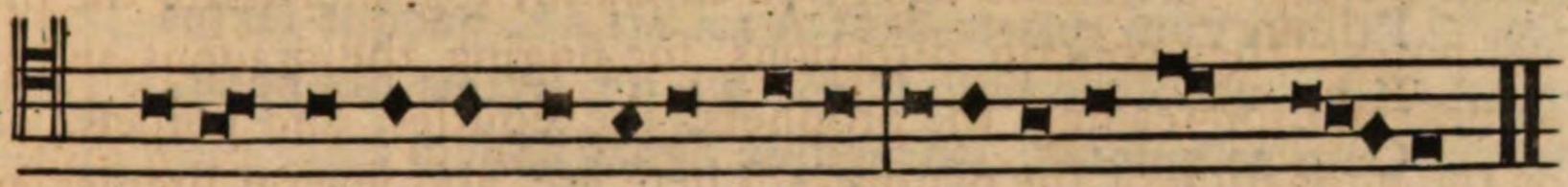
Dixit Dominus Domino meo: Sede à dextris me – is.

II 

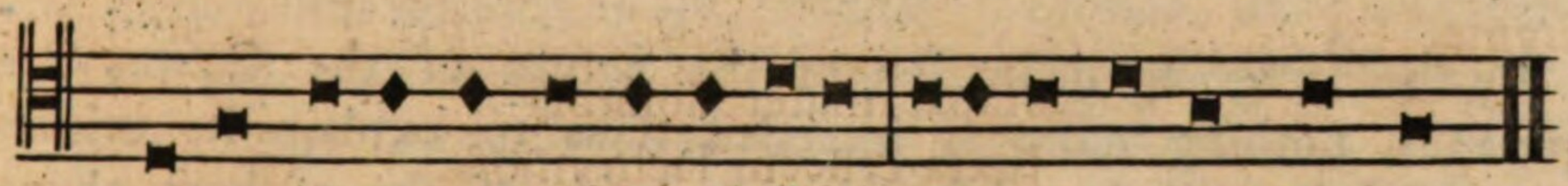
Dixit Dominus Domino meo: Sede à dextris me – is.

III 

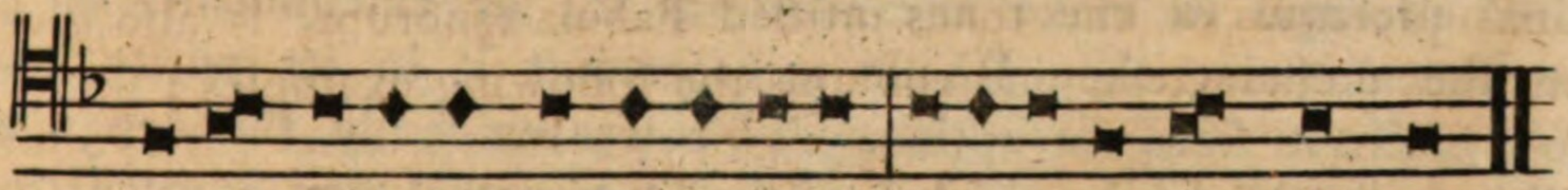
Dixit Dominus Domino meo: Sede à dextris me – is.

IV 

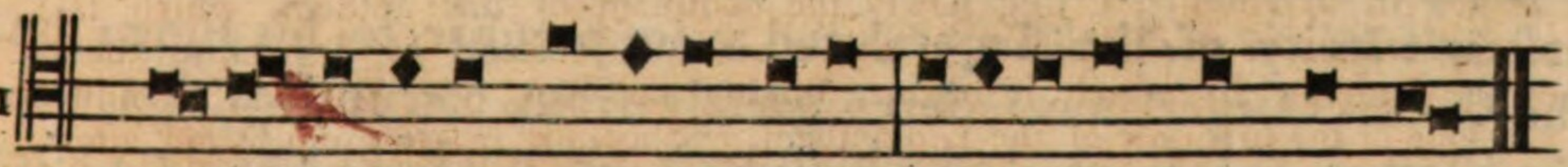
Dixit Dominus Domino meo: Sede à dextris me – is.

V 

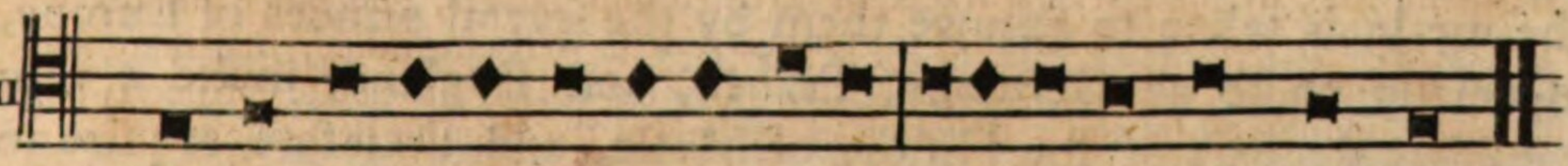
Dixit Dominus Domino meo: Sede à dextris me – is.

VI 

Dixit Dominus Domino meo: Sede à dextris me – is.

VII 

Dixit Dominus Domino meo: Sede à dextris me – is.

VIII 

Dixit Dominus Domino meo: Sede à dextris me – is.

To facilitate the remembrance of the formula of each of the tones, and particularly to impreſs upon the minds of children the finals and dominants that characteriſe them, memorial verſes have been compoſed, of which the following are a ſpecimen.

Primus habet tonus F SOL LA, ſextus et idem:
UT RE FA octavus: ſit tertius, atque ſecundus:
LA SOL LA quartus: dant UT MI SOL tibi quintum:
Septimus at tonus FA MI FA SOL tibi monſtrat.

Septimus et ſextus, dant FA MI RE MI quoque primus.
Quintus et octavus, dant FA SOL FA ſicque ſecundus.
SOL FA MI RE FA tertius, RE UT RE MI reque quartus.

Primus cum quarto dant A LA MI RE, quoque ſextus
E FA UT ſecundus: C SOL FA UT tertius tibi notat,
Cum eo quintus, octavuſque ſignat ibidem:
Septimus in D LA SOL RE ſuum ponit EUOUAE.

By the foregoing deduction of the nature of the Cantus Gregorianus, nothing more is intended than to explain its original form, for it will be obſerved that none of the authors abovecited preſume to make any additions to, or amendments of it, on the contrary they labour to repreſent it in its purity, and to preſerve it from corruption. This was evidently the deſign of Nivers; and his book, which is of the controverſial kind, is calculated to correct certain abuſes in the ſervice that aroſe from the wantonneſs and levity of the ſingers, and were peculiar to his time; but the Cantus Gregorianus ſuffered greatly from corruptions that were the effect of ignorance, and which took place within a century after its inſtitution; and theſe corruptions, their nature and cauſes, and the methods taken to remove them by the ſeveral princes of Europe, eſpecially thoſe of Germany, France, and England, make a very conſiderable part of the Hiſtory of Muſic, and therefore require to be particularly mentioned; and if the foregoing digreſſion may ſeem to deviate from the rule which chronology preſcribes in the relation of events, let it be remembered that in this caſe a ſtrict adherence to it would have been abſurd; for who can underſtand a relation of the ſeveral corruptions of the Cantus Gregorianus, who is not firſt made

ſenſible

ſenſible of its nature and application; in ſhort, who has not a clear conception of the thing itſelf, in its original ſtate of purity and perfection.

That the Cantus Gregorianus became corrupt in a ſhort time after its inſtitution, may be gathered from the eccleſiaſtical and other writers, from the ſeventh century downwards. Saint Bernard, in a preface to the antiphonary of the Ciſtercians, has enumerated many abuſes, diſorders, and irregularities which had crept into the church-ſervice before his time, and this even at Rome itſelf: he ſpeaks of the ſingers of his time as ignorant and obſtinate to a degree that is ſcarce to be credited; for he repreſents them as confounding the rules, and preferring error to truth; and referring to an Antiphon, 'Nos 'qui vivimus,' the proper termination whereof is in D, he adds, that thoſe unjuſt prevaricators, the ſingers of his time, would terminate it in G, and aſſert with an oath or wager, that it was of the eighth tone.

Sir Henry Spelman (whom Gerard Voſſius has followed, in an account given by him of this matter) * upon the authority of an anonymous commentator on Hugo Reutlingenſis, relates that the Cantus Gregorianus was very much corrupted by the Germans. The words of the author thus referred to are, 'Certain Germans, and particular-'ly the clergy of the order of St. Benedict, who had learned perfect-'ly and by heart the muſical cantus, not only theoretically, but alſo 'by practice and exerciſe, leaving out the keys and lines which are 'required in the muſical Neuma, † note or character, began to note 'them down ſimply in their books; and after that, their ſucceſſors 'ſung in the ſame manner, and taught their ſcholars, not theoreti-'cally, but by frequent practice and long exerciſe; which cantus 'thus learned by practice, became various in different places, 'wherefore it was then termed practice, uſus ‡, and not muſic. 'In this cantus however the ſcholars afterwards began to differ 'in many things from their maſters, and the maſters from their 'ſcholars; from which difference, and the ignorance of the theory,

* Voci Frigdoræ. Sed vide Ger. Voſſ. De Scientiis Mathematicis, cap. xxi. §. 12.

† This word, which Sir Henry Spelman has elſewhere ſaid is ſynonymous with the noun Note, has two ſignifications; that which Gaffurius has given of it is its primitive and true one; and he ſays it is an aggregation of as many ſounds or notes as may be conveniently uttered in one ſingle reſpiration. Vide Spelman's Gloſſ. voce NEUMA; and Gaffurius, Pract. Muſ. lib. I. cap. viii. Probably it is derived from the Greek Πνευμα.

‡ For which reaſon, the terms Saliſbury uſe, Hereford uſe, the uſe of Bangor, York, Lincoln, are taken to deſcribe the ritual of thoſe ſeveral cathedrals in the preface to the book of Common Prayer.

'the practice was said to be confused, which confused practice being 'despised, almost all the Germans, who were hitherto miserably se- 'duced by that cantus, are returned to the true art.'

These corruptions, according to the author above-cited, seem to have been peculiar to Germany; but there were others of an earlier date which prevailed in France and also in Britain, for the latter of which countries Gregory seems to have entertained such a degree of affection, as makes it highly probable that the inhabitants of it were some of the first people to whom the knowledge of the Cantus Gregorianus was communicated, and that they became Christians and singers at one and the same period.

The history of the conversion of the Saxon inhabitants of this island to christianity in the year 585, is related by all our historians, particularly by Bede, whose account of it, as exhibiting a very natural representation of the simplicity of manners which then prevailed, is here inserted.

'It is reported that merchants arriving at Rome, when on a 'certain day many things were to be sold in the market-place, 'abundance of people resorted thither to buy, and Gregory himself 'with the rest, where, among other things, boys were set to sale 'for slaves, their bodies white, their countenance beautiful, and 'their hair very fine: having viewed them, he asked, as is said, 'from what country or nation they were brought, and was told 'from the island of Britain, whose inhabitants were of such a pre- 'sence*. He again enquired whether those islanders were Christians, 'or still involved in the errors of paganism, and was informed that 'they were pagans. Then fetching deep sighs from the bottom of 'his heart, "Alas! what pity said he, that the author of darkness "is possessed of men of such fair countenances, and that being re- "markable for such graceful aspects, their minds should be void of "inward grace." He therefore again asked what was the name of 'that nation, and was answered, that they were called Angles: "Right, said he, for they have an angelical face, and it becomes "such to be coheirs with the angels in heaven. What is the name, "proceeded he, of the province from which they are brought?" 'It was replied, that the natives of that province were called Deiri†,

* William Thorn, a monk of St. Augustine's Canterbury, says there were three of these boys: 'Vidit in foro Romano tres pueros Anglicos lactei candoris.' Decem Scriptores, pag. 1757.

† i. e. of Deirham, or Durham.

"Truly Deiri, ſaid he, withdrawn from wrath and called to the "mercy of Chriſt. How is the king of that province called?" 'They told him his name was Elle; and he, alluding to the name, 'ſaid, "Hallelujah, the praiſe of God the creator muſt be ſung in 'thoſe parts." Then repairing to the biſhop of the Roman and 'apoſtolical ſee (for he was not himſelf then made pope) he intreated 'him to ſend ſome miniſters of the word into Britain, to the nation 'of the Engliſh, by whom it might be converted to Chriſt *.'

The above relation is very characteriſtic of the humanity and ſimplicity of the reverend father. Fuller, who labours hard to make all mankind as merry as himſelf, thinks that in his ready application of the anſwers of the merchants to his purpoſe, his wit kept pace with his benevolence, and having a mind to try whether he could not be as witty as the father, he has given the whole converſation a dramatic turn, by putting it into the form of a dialogue †.

The ſight of theſe children, and the knowledge which Gregory thereby acquired of this country and its inhabitants, were the motives for ſending Auguſtine the monk hither, with whom, as we are expreſsly told by Johannes Diaconus, who wrote the Life of St. Gregory, ſingers were alſo ſent with Auguſtine, then going to Britain, and afterwards diſperſed through the weſt, who thoroughly inſtructed the barbarians in the Roman inſtitution. The ſame author proceeds to relate that after the death of theſe men ‡ the

* Bed. Hiſt. Eccleſiaſt. lib. II. cap. i.

† Church Hiſt. of Britain, Cent. VI. book ii.

‡ The names of the ſingers who came into Britain with Auguſtine are no where particularly mentioned. We learn however from Bede that the church ſong was at firſt only known in Kent; that afterwards, that is ſay about the year 620, when Paulinus became biſhop of the Northumbrians, a deacon of his. named James, had rendered himſelf very famous for his ſkill in the church ſong; and that Wilfrid, a ſucceeding biſhop of the ſame ſee, about the year 664 invited out of Kent Eddi, ſurnamed Stephen, for the purpoſe of teaching the ſame in the ſeveral churches of the Northumbrians. Farther, Bede gives a particular account of John the ſinger above-mentioned, whom he ſtiles archchanter or precentor of the church of the holy apoſtle Peter, and abbot of the monaſtery of St. Martin, and elſewhere ſinger of the apoſtolic ſee: he ſays he was ſent into Britain by pope Agatho, that he might teach the method of ſinging throughout the year, as it was practiſed at St. Peter's at Rome; and that he ſettled in a monaſtery which Ecgfrid king of the Northumbrians had founded at the mouth of the river Wire. He farther ſays that John did as he had been commanded by the pope, teaching the ſingers of this monaſtery the order and manner of ſinging and reading aloud, and committing to writing all that was required throughout the whole courſe of the year for celebrating feſtivals, all which were in Bede's time obſerved in that monaſtery, and tranſcribed by many others elſewhere: he ſays farther that the ſaid John did not only teach the brethren of that monaſtery, but that ſuch as

modulation of the weſtern churches became very corrupt, and continued ſo till pope Vitalianus the Firſt, who introduced the organ into the choral ſervice, ſent John, a famous Roman ſinger, together with Theodore, afterwards archbiſhop of Canterbury, by the way of

had ſkill in ſinging reſorted from almoſt all the monaſteries of the ſame province to hear him.

The reverend Mr. Johnſon, late of Cranbrook in Kent, has given a ſummary of this relation, with his own ſentiments thereon, in a book which hardly any one now looks into, but which abounds with a great variety of curious learning, his Collection of Eccleſiaſtical Laws; in the general preface to which he ſays, upon the authority of Bede, that pope Agatho, above eighty years after Auguſtine's coming over, ſent John, the precentor of St. Peter's church in Rome, to inſtruct the monks of Wirmuth in the annual courſe of ſinging; and that he did accordingly teach them the order and rite of ſinging and reading in the celebration of feaſts through the circle of the whole year, and that he wrote down and left behind him whatever was requiſite to this purpoſe. And that the ſum of what he taught them conſiſted in new tunes or modes of muſic, ſome variations of habit, geſture, and perhaps of the ſeries of performing religious offices according as the faſhions had been altered at Rome ſince Auguſtine's coming hither—that he taught them viva voce, and what he wrote down concerned only the celebration of the feſtivals—that John was ſent to one monaſtery only, and is not ſaid to have taught any but the Northumbrians.—That upon Theodore's firſt coming to Canterbury, which was ten or twelve years before this, the Roman way of ſinging was well known in Kent, and then began to be taught in other churches—that Wilfrid ſoon after invited Eddi, otherwiſe called Stephen, out of Kent into the North, to teach this practice there.—But thirty-five years before Theodore's arrival, James the Kentiſh deacon had been left at York by Paulinus when he retired to Rocheſter, on purpoſe to teach them the way of ſinging uſed by the Romans and the Kentiſh. The ſame author adds as a conjecture of his own, that it is probable that neither of theſe Kentiſh ſinging-maſters went farther than Hexham, however not to Wirmuth.

The ſame Collection contains a decree of the Rman council, which as it relates to muſic, and was made to reform an abuſe of it that prevailed about this time, it may not be improper here to mention. By this act it is decreed that biſhops, and all whoſoever that profeſs the religious life of the eccleſiaſtical order, do not uſe weapons, nor keep muſicians of the female ſex, nor any muſical concerts whatſoever, nor do allow of any buffooneries or plays in their preſence.

Of James, the deacon of Paulinus above-mentioned, he ſays that he lived to his [Bede's] time. If ſo, and conſidering that Paulinus was biſhop of Northumbria, in which province Bede's monaſtery was ſituate, it is more than probable that Bede and James were intimately acquainted.

Bede alſo mentions as living in the time of Theodore, Putta, a man of great ſimplicity in his manners, extremely well verſed in eccleſiaſtical diſcipline, and remarkably ſkilful in church-muſic, and who, on account of theſe his excellencies, was preferred to the ſee of Rocheſter. Mention will be made of this perſon hereafter, in the interim it is to be obſerved, that the teſtimony of Bede is of great weight in all matters that relate to church diſcipline, and that hardly any man of his time was better acquainted with the muſic of the church than himſelf: in a ſummary of his own life, at the end of his Eccleſiaſtical Hiſtory, he mentions his being a prieſt of the monaſtery of Wiremouth, the very monaſtery where John the precentor ſettled upon his arrival in Britain; and that he there applied himſelf to the meditation of ſcripture, the obſervance of regular diſcipline, and the daily care of ſinging in the church; and that he always delighted in learning, teaching, and writing.

France

France into Britain, who corrected the abuſes that had crept into the church-ſervice of this, as it ſhould ſeem, favourite people.

Farther he ſays, that afterwards the Gregorian chant became again corrupt, particularly in France, for which reaſon Charlemagne ſent two clerks to Rome with a requeſt to Adrian, the then pope, that they might be inſtructed in the rudiments of the genuine Roman ſong; theſe brought back the metropolis of Metz to its original purity of ſinging, and that city communicated its example to all France. The ſame author adds that the death of theſe two men produced the ſame effect, though in a leſs degree, in France, as that of the others had done in Britain; wherefore the king wrote again to Adrian, who ſent him two ſingers, who found that the church of Metz had deviated a little from the true rule of ſinging, but the other churches a great deal. The ſame author adds, that this diverſity was remarkable in his time, for that the reſt of the French and all the German churches were then as much inferior in the purity of their choral ſervice to that of Metz, as the latter were to the Roman; but for the preſent he ſays theſe men reduced the church of Metz to order.

Monſieur Nivers, from Peytat, a modern writer, and a countryman of his, who it ſeems wrote an eccleſiaſtical hiſtory of the chapel of the king of France, cites the following paſſage:

Pope Stephen II. being conſtrained to ſeek to Pepin king of France for protection of the holy ſee againſt the Lombards, arrived in that kingdom ſo ſoon after Pepin's aſcent to the throne, as to perform the ceremony of his conſecration in the abbey-church of St. Denys. From Rome the pope had brought with him chaplains and ſingers, who firſt made it their buſineſs to inſtruct the choir of St. Denys in the Roman office; and afterwards, for the pope made a conſiderable ſtay in France, aſſiſted in communicating the knowledge of it to the other churches in that kingdom. At that time the chapel of Pepin conſiſted of the very flower of the clergy, and, with the aſſiſtance of the Romans, not only the plain-chant but the uſe of inſtruments was ſpread throughout the realm. This reformation it is true did not laſt long, for upon the death of Pepin his ſon Charlemagne found the choral ſervice in as great diſorder as ever, which, ſays the monk of St. Cibard of Angouleſme, was the reaſon that induced this emperor to apply to Adrian for aſſiſtance from Rome.

CHAP.

CHAP. II.

THE account given of this matter by another ancient writer, a monk of St. Gal, is that the pope ſent to France, at the requeſt of the emperor Charlemagne, twelve excellent ſingers, anſwering to the number of the apoſtles, whoſe inſtructions were to reform the muſic of the French churches, and regulate the ſervice, ſo as that there might be an uniformity in this reſpect throughout the kingdom; but that theſe men, jealous of the glory of France, in their way thither plotted to corrupt and diverſify the plain-chant in ſuch a manner as to increaſe the confuſion in which it was involved, and thereby render the people for ever incapable of performing it correctly. As ſoon as they arrived in France, where they were received with great honour, they were, by order of the emperor, diſperſed to different parts of the kingdom; but how well they anſwered the purpoſe of ſending for them, the event ſoon ſhewed; for every man teaching a different chant for the true one of St. Gregory, which they were ſent for to reſtore to its original purity and propagate, the confuſion was greater than ever *.

The emperor it ſeems was too well ſkilled in muſic for this deceit to paſs upon him unnoticed: he had, in the life-time of his father, heard the true Roman chant at Treves, where he had paſſed the Chriſtmas, and at Metz alſo he had been preſent when it was ſung in its perfection; but after the arrival of theſe people, ſpending part of that feſtival at Paris and the reſt at Tours, he was ſurpriſed to hear a melody different from that which before he had ſo much admired; his diſappointment excited in him a curioſity to hear the ſervice as it was performed in the other churches; but among the ſingers he found ſuch a diſagreement, that he complained to the pope of the behaviour of thoſe whom he had ſent; the pope recalled them to Rome, and condemned ſome of them to baniſhment, and the reſt to perpetual impriſonment. After this it was that Adrian ſent to France the two ſingers who reformed the French church-muſic, as above is related.

* Vid. Niv. ſur le Chant. Greg. chap iv. pag. 33.

None

None of the hiſtorians who relate the tranſactions of this period, except Baronius, aſſign the reaſon of the emperor's application to pope Adrian for aſſiſtance in the reformation of choral muſic in his kingdom of France. It ſeems that that pope had eſtabliſhed the uſe of the Cantus Gregorianus by the decree of a council, which he had ſummoned for that purpoſe, and that his zeal to render it univerſal was the effect of a miracle, which, if we may believe the writers of thoſe times, had then lately been wrought in its favour. It is ſaid, that after the death of Gregory the method of ſinging inſtituted by him began to decline, and the Ambroſian cantus to revive. Adrian had entertained an opinion of the ſuperior excellence of the former, and was determined to eſtabliſh the uſe of it throughout the church; for this purpoſe he ſummoned a council above-mentioned, who being unable to determine the preference between the one and the other of the offices, referred the deciſion of the matter to God, and a miracle announced that the preference was due to the Gregorian office.

Durandus has given a very circumſtantial relation of this extraordinary event in the following words *.

'We read in the life of St. Eugenius that till his time the 'Ambroſian office was more uſed by the church than the Gre-'gorian: pope Adrian ſummoned a council, by which it was 'decreed that the Gregorian ought to be univerſally obſerved. 'Moreover St. Eugenius coming to a certain council, ſummoned 'for this purpoſe, and finding that it had been already diſſolved 'three days, he perſuaded the lord pope to recall all the prelates who 'had been preſent thereat. The council, therefore, being reaſſem-'bled, it was the unanimous opinion of all the fathers, that the Am-'broſian and Gregorian miſſals ſhould be laid upon the altar of St. 'Peter the apoſtle, ſecured by the ſeals of moſt of the biſhops, and 'the doors of the church ſhut, and that all perſons preſent ſhould 'ſpend the night in prayer that God would ſhew by ſome ſign which 'of theſe miſſals he choſe to have uſed by the church; and this was 'done in every reſpect. Accordingly, in the morning, when they en-'tered the church they found the Gregorian miſſal torn to pieces, 'and ſcattered here and there, but they found the Ambroſian only

* Afterwards pope; the ſecond of that name. Du Pin, Hiſt. Eccl. vol. III. pag. 6.

'open

'open upon the altar, in the ſame place where it had been laid. 'By which ſign they were taught from heaven that the Gregorian 'office ought to be diſperſed throughout the whole world, and that 'the Ambroſian ſhould be obſerved only in that church in which it 'was firſt inſtituted. And this regulation prevails to the preſent day; 'for in the time of the emperor Charles, the Ambroſian office was 'very much laid aſide, and the Gregorian, by the imperial 'authority, was brought into common uſe. Ambroſe inſtituted 'many things according to the ritual of the Greeks.' Gulielm. Durandus Rationale Divinorum Officiorum. Lugd. 1574, lib. II. cap. ii. numb. 5.

The hiſtorians of the time take notice, that in the year 787 a violent conteſt aroſe between the Roman and French ſingers, concerning the true method of ſinging divine ſervice, which was carried on with ſo much heat and bitterneſs, that neither ſide could be made to yield. At length, the matter was brought before the emperor; who, after hearing the reaſons and arguments of each party, determined in favour of the Roman practice, by declaring, that the French ſingers had corrupted the Cantus Gregorianus. Baronius has related the tranſaction at length in theſe words:

'In the ancient chronicle of Charles king of France, which Pi-'thoeus publiſhed, theſe things then done at Rome are recorded. 'The moſt pious king Charles returned, and celebrated Eaſter at 'Rome with the apoſtolical lord. Behold a contention aroſe, during 'the time of the paſchal feaſt, between the Roman and French 'ſingers: the French ſaid that they ſung better and more gracefully 'than the Romans; the Romans ſaid they performed the eccleſiaſti-'cal cantus more learnedly, as they had been taught by St. Gregory, 'the pope; and that the French ſung corruptly, and debaſed and 'ruined the true cantilena. This contention came before the em-'peror Charles; and the Gauls, relying on his favour, violently ex-'claimed againſt the Roman ſingers; and the Romans, upon the 'authority of their great learning, affirmed that the Gauls were fools 'and ruſtics, and as unlearned as brute beaſts, and preferred the learning 'of St. Gregory to their ruſticity: and the altercation ceaſing on 'neither ſide, the emperor ſaid to his ſingers, "Tell me plainly, "which is the purer, and which the better, the living fountain, or its "rivulets running at a diſtance." They all, with one voice, anſwered,

‘ the fountain; as the head and origin is the purer, and the rivulets,
‘ the farther they depart from the fountain, are by ſo much the more
‘ muddy, foul, and corrupted with impurities. “ Then, ſaid the
“ emperor, return ye to the fountain of St. Gregory, for ye have
“ manifeſtedly corrupted the eccleſiaſtical cantus.”

‘ The emperor, therefore, ſoon after deſired ſingers of pope Adrian,
‘ who might reform the French ſinging; and he ſent to him Theo-
‘ dore and Benedict, two of the moſt learned ſingers of the Roman
‘ church, who had been taught by St. Gregory; and he ſent by
‘ them the antiphonary of St. Gregory, which he had marked with
‘ the Roman note. The emperor returning into France, ſent a ſinger
‘ of the city of Metz, with orders that the maſters of ſchools
‘ throughout all the provinces of France ſhould deliver their anti-
‘ phonaries to them to be corrected, and that they ſhould learn to ſing
‘ of them. Upon this, the antiphonaries of the French were correct-
‘ ed, which every one had corrupted, by adding or diminiſhing ac-
‘ cording to his own fancy, and all the ſingers of France learned the
‘ Roman note; except that the French who with their voices, which
‘ are naturally barbarous, could not perfectly expreſs the delicate or
‘ tremulous, or divided ſounds, in muſic, but broke the ſounds in
‘ their throats, rather than expreſſed them: but the greateſt ſinging
‘ ſchool was that in the city of Metz; and as much as the
‘ Roman ſchool excels the Metenſian in the practice of ſinging, by
‘ ſo much does the Metenſian excel the other ſchools of France.
‘ In like manner, the aforeſaid Roman ſingers inſtructed the ſingers
‘ of the French in the art of inſtrumental muſic; and the emperor
‘ Charles again brought with him from Rome into France, maſters
‘ of grammar and mathematics, and ordered the ſtudy of letters to
‘ be every where purſued; for before his time, there was no atten-
‘ tion paid to the liberal arts in Gaul. This account is given of theſe
‘ affairs in that chronicle. Moreover, there is an ordinance of
‘ Charles the Great himſelf concerning the performance of the Ro-
‘ man muſic in Gaul, in theſe words: “ That the monks fully and
“ regularly perform the Roman ſinging in the nocturnal ſtated ſer-
“ vice, according to what our father king Pepin, of bleſſed memory,
“ decreed ſhould be done, when he introduced the Gallican ſinging
“ for the ſake of unanimity in the Apoſtolic See, and the peaceful
“ concord of the Holy Church *.”

* Baron. Annal. Eccleſiaſt. tom. IX. pag. 415.

The zeal which this prince diſcovered through the courſe of a long reign, in favour of the church, and for the re-eſtabliſhment of eccleſiaſtical diſcipline, has procured him a place among thoſe eccleſiaſtical writers enumerated in Du Pin's voluminous hiſtory. It was the good fortune of this emperor to have in his ſervice a ſecretary, named Eginhart, a man not more eminent for his knowledge of the world, than celebrated for his ſkill in the literature of thoſe times. To him we are indebted for a life of this great prince, one of the moſt curious and entertaining works of the kind at this day extant: in this are recorded, not only the great events of Charlemagne's reign, but the particulars of his life and character, a very exact deſcription of his perſon, his ſtudies, his recreations, and, in ſhort, all that can gratify curioſity, or tend to exhibit a lively portrait of a great man. Not to enter into a minute detail of his wars and negociations, or the other important tranſactions during his government, let this ſhort ſketch of his perſonal and mental endowments, and his labours to reſtore the ſervice of the church to its original purity, ſuffice, as having a more immediate relation to the ſubject of this work.

CHARLEMAGNE was born in the year of Chriſt 769, at Ingelheim, a town in the neighbourhood of the city of Liege, in Germany. His father was Pepin, king of France, ſurnamed the Little, by reaſon of the lowneſs of his ſtature; who, upon his deceaſe, made a partition of his dominions between his two ſons, bequeathing to Charlemagne, the elder, France, Burgundy, and Aquitain, and to Carloman, Auſtria, Soiſſons, and other territories; but Carloman ſurviving his father a very ſhort time, Charlemagne became the heir of all his dominions, and at length emperor of the Weſt.

The ſtature and perſon of Charlemagne are very particularly taken notice of and deſcribed by the writers of his hiſtory, by which it appears, that he was as much above the ordinary ſize of men, as his father Pepin was below it. Turpin, the archbiſhop of Rheims, relates, that he was eight feet high, that his face was a ſpan and an half long, and his forehead one foot in breadth, and that his body and limbs were well proportioned. He had a great propenſity to learning, having had ſome of the moſt celebrated ſcholars of the age in which he was born, for his tutors; and it is to the honour of this country that Alcuin, an Engliſhman, and a diſciple of Bede, ſurnamed the Venerable, was his inſtructor in rhetoric, logic, aſtronomy, and

the

the other liberal ſciences *; notwithſtanding which, there is a very curious particular recorded of him, namely, that he never could, though he took infinite pains for the purpoſe, acquire the manual art of writing or delineating the letters of the alphabet †; ſo that whatever books or collections are aſcribed to him, muſt be ſuppoſed either to have been dictated by him, or written by others under his immediate inſpection: indeed, the works attributed to him are of ſuch a kind as neceſſarily to imply the aſſiſtance of others, and that they are to be deemed his in no other ſenſe than as they received his ſanction or approbation; for they are chiefly either capitularies, as they are called, relating to eccleſiaſtical matters, as the government of the church, the order of divine ſervice, the obſervance of rites and ceremonies, and the regulation of the ſeveral orders of the clergy; or they are letters to the ſeveral princes and popes, his contemporaries, and to biſhops, abbots, and other eccleſiaſtical perſons ‡. Two works in particular are aſcribed to him, and the opinion that they were of his compoſition is generally acquieſced in; theſe are letters written in his name to Elipandus, biſhop of Toledo, and other biſhops of Spain, on certain points of doctrine; and four books againſt the worſhip of images: and it is with a view to theſe, and ſome other compoſitions that paſſed for his, that Sigebert, Du Pin, and others, give him a place among the eccleſiaſtical writers of the eighth century.

The zeal of this emperor to introduce the Cantus Gregorianus into his dominions, and to preſerve it in a ſtate of purity, has drawn upon him an imputation of ſeverity; and upon the authority of that ſingle paſſage in the Rationale of Durandus, above-cited, he is cenſured as having forced it upon the French with great cruelty. But there is nothing either in his relation of the ſuppoſed miracle in its favour, or in that of Baronius touching the contention at Rome, which will warrant this charge; for in that diſpute at which Eugenius was pre-

* Alcuin was well verſed in the liberal ſciences, particularly in muſic, as appears by a tract of his on the uſe of the Pſalms, and by the preface to Caſſiodorus De ſeptem Diſciplinis, firſt printed in Garetius's edition of that author, and which is expreſly ſaid by Du Pin, Fabricius, and others, to have been written by Alcuin. It was at the inſtance of Alcuin that Charlemagne, in the year 790, founded the univerſity of Paris.

† Tentabat et ſcribere, tabulaſque et codicellos ad hoc in lectulo ſub cervicalibus circumferre ſolebat, ut cum vacuum tempus eſſet, manum effingendis literis aſſuefaceret. Sed parum proſpere ſucceſſit labor præpoſterus ac ſero inchoatus. Eginhart De Vita Caroli Magni, cap. xxv. edit. Beſſelii.

‡ Du Pin, Nouv. Biblioth. de Auteurs Eccleſiaſt. Siec. VIII.

ſent, it does not appear that he at all intermeddled; and in the other, the queſtion which he put to his own clergy, is manifeſtly an appeal to reaſon, and no way indicates a diſpoſition to coercive meaſures. 'Tell me, ſaid the emperor, which is the purer, the living fountain, 'or its rivulets?' They anſwered, 'the former.' Then ſaid the emperor, 'Return ye to the fountain of St. Gregory; for in the ri-'vulets the eccleſiaſtical cantus is manifeſtly corrupted.' Eginhart has mentioned in general that Charlemagne laboured to rectify the diſorderly manner of ſinging in the church *; but he mentions no circumſtances of bloodſhed, or cruelty, to enforce a reformation: and the fact is, that ſeveral churches in his dominions, particularly thoſe of Milan and Corbetta, were ſuffered to retain either the Ambroſian or a worſe uſe, notwithſtanding his wiſhes and efforts to the contrary †. In ſhort, it ſeems that his behaviour upon this occaſion was that of a wiſe man, or, at leaſt, of one whoſe zeal had a ſufficient

* Eginhart, De Vita Caroli Magni, cap. xxvi. edit. Beſſelii.

† Moſh. Eccl. Hiſt. 8vo. vol. II. pag. 98.

The notes of Beſſelius and others upon this paſſage of Eginhart [Legendi atque pſallendi diſciplinam diligentiſſime emendavit] are very curious, as they declare what were the abuſes in ſinging which Charlemagne laboured to reform. Quantum veteres ſono vocum diſtincto ſtuduerint, vel illud argumento eſt, quod *phonaſco* ſedulam dederint operam, teſte etiam de *Auguſto* Sueton. cap. lxxxiv. Cæterum de *miſſaticis cantionibus et officio Ambroſiano* à Carolo correctis, prolixe Sigebertus, ad an. 774 & 790. Gobelin. Perſon. *ætat.* 6. *Coſmodrom.* cap. xl. p. 193. *Guliel. Durandus*, lib. V. *Rational. Divin. Offic.* cap. ii. Frid. Lindenbrogius *Gloſſar. L L. Antiq.* fol. 1369, & Goldaſt. *in Ekkehardi Junioris caſus*, pag. 114. *tom. I. Rer. Alamannic.* Beſſelius. Carolus diſſonantia cantus inter Romanos & Francos offenſus, eum conciliare & emendare omnibus viribus ſtuduit; ideo a papa cantores Romanos ſibi mitti petiit, qui Francos vera pſallendi ratione imbuerent. Horum duos accepit, ex quibus unum palatio ſuo præfecit, alterum metas miſit, qui etiam ejus urbis incolas ita in canendi ſcientia erudivit, ut ſicut Roma inter omnes cantu, ſic meta inter Francos emineret, & ſeminarium quaſi cantorum Ciſalpinorum eſſet. Ab hac igitur urbe cantilena eccleſiaſtica Germanice tunc temporis *mete* dicebatur, quia hic præcipue cantus excolebatur, cujus denominationis veſtigia adhuc hodie in vulgari locutione, *die Früh mette ſingen*, deprehenduntur. Horiſonus maxime majorum noſtrorum erat cantus, quem Monach. Egoliſm. in Vita Karoli M. ita deſcribit: *Tremulas vel vinnulas, ſeu colliſibiles, ſeu ſecabiles voces in cantu non poterant perfecte exprimere Franci, naturali voce barbarica frangentes in gutture voces potius, quam experimentes.* Clarius Ekkchard. Minim. in vit. Notkeri, cap. viii. *Alpina ſiquidem corpora*, ait, *vocum ſuarum tonitruis altiſone perſtrepentia, ſuſceptæ modulationis dulcedinem proprie non reſultant, quia bibuli gutturis barbara groſſitas, dum inflexionibus et repercuſſionibus et diaphonarium diphtongis mitem nititur edere cautilenam, naturali quodam fragore, quaſi plauſtra per gradus confuſe ſonantia, rigidas voces jactat, ſicque audientium animos, quos mulcere debuerant, tales exaſperando magis ac obſtrependo conturbant.* Nemo hæc opinor, mirabitur, qui fragmenta antiquæ Germanorum linguæ legit, ex quibus ſatis æſtimari poteſt, quam difficilis fuerit Teutonicæ linguæ pronuntiatio, ac proin modulatio. Schmincke.

allay

allay of diſcretion * ; and that he was poſſeſſed of a very conſiderable portion of this latter quality, and entertained a mild and forgiving diſpoſition towards thoſe who had offended him, may be inferred from that very pretty ſtory related by Mr. Addiſon, in the Spectator, N° 181, of the princeſs Imma, his daughter, and his ſecretary Eginhart, and her ingenious device, by carrying him on her back through the ſnow, to prevent the diſcovery of an amour which terminated in their marriage.

The purity to which the Gregorian chant was reſtored by the zeal of Charlemagne, ſubſiſted no longer in France than to the time of Lewis the Debonnaire, his ſon and immediate heir, who ſucceeded to the empire of the Weſt in 814; for in his reign the muſic of the church was again corrupted to that degree, that the Gregorian chant ſubſiſted only in the memory of certain Romans, who had been accuſtomed to the ſinging it; for neither were there in France or at Rome, any books wherein it had been written. This ſtrange circumſtance is related by Amalarius Fortunatus, a principal eccleſiaſtic in the chapel of Lewis le Debonnaire, who himſelf was ſent by Lewis to requeſt of Gregory IV. then pope, a ſufficient number of ſingers, to inſtruct the

* His behaviour in this reſpect ſeems to have been widely different from that of Alphonſus, king of Spain, who, in the year 1080, baniſhed the Gothic liturgy out of his kingdom, and introduced the Roman office, though miracles were pleaded in favour of the former. Talent. ann. 1080. col. I. and vide Mariana, in his Hiſtory of Spain, book IX. pag. 152. The circumſtances of this extraordinary event, and the miracles that preceded it, are more particularly related by other hiſtorians, who ſpeak to this purpoſe: Alexander II. had proceeded ſo far in the year 1068, as to perſuade the inhabitants of Arragon into his meaſures, and to conquer the averſion which the Catalonians had diſcovered for the Roman worſhip. But the honour of finiſhing this difficult work, and bringing it to perfection was reſerved for Gregory VII. who, without interruption, exhorted, threatened, admoniſhed, and intreated Sancius and Alphonſo, the kings of Arragon and Caſtile, until, fatigued with the importunity of this reſtleſs pontiff, they conſented to aboliſh the Gothic ſervice in their churches, and to introduce the Roman in its place; Sancius was the firſt who ſubmitted to this innovation, and in the year 1080 his example was followed by Alphonſo. The methods which the nobles of Caſtile employed to decide the matter were very extraordinary. Firſt, they choſe two champions, who were to determine the controverſy by ſingle combat, the one fighting for the Roman liturgy, the other for the Gothic. The fiery trial was next made uſe of to terminate the diſpute; the Roman and Gothic liturgies were committed to the flames, which, as the ſtory goes, conſumed the former, while the latter remained unblemiſhed and entire. Thus were the Gothic rites crowned with a double victory, which however was not ſufficient to maintain them againſt the authority of the pope, and the influence of the queen Conſtantia, who determined Alphonſo in favour of the Roman ſervice. Vide Bona De Rebus Liturg. lib. I. cap. ix. pag. 216. Le Brun, loc. citat. pag. 292. Jo. de Ferreras, Hiſt. de l' Eſpagne, tom. III. pag. 237. 241. 246. Moſh. Eccl. Hiſt. vol. II. pag. 341.

people;

people; by whom the pope ſent to the emperor for anſwer, that he could not comply with his requeſt, for that the laſt of thoſe men remaining at Rome had been ſent into France with Walla, who had formerly been ambaſſador from Charlemagne on the ſame errand. The words of Amalarius, in the preface to his book De Ordine Antiphonarii, are theſe: 'When I had been a long while affected with 'anxiety, on account of the difference among the ſingers of antiphons 'in our province, and did not know what ſhould be rejected and 'what retained, it pleaſed him who is bountiful to all, to eaſe me of 'my ſcruples; for there having been found in the monaſtery of 'Corbie, in Picardy, four books, three whereof contained the noc-'turnal, and the other the diurnal, office, I ſtrove to make all the 'ſail I could out of this ſea of error, and to make a port of quiet; 'for when I was ſent to Rome by the holy and moſt chriſtian em-'peror, to the holy and moſt reverend father Gregory, concerning 'theſe books, it pleaſed his holineſs to give me the following anſwer: "I have no ſingers of antiphons, whom I can ſend to my ſon and "lord the emperor; the only remaining ones that we had, were "ſent from hence into France with Walla, who was here on an em-"baſſy." By means of theſe books, I diſcovered a great difference 'between the antiphons of our ſingers and thoſe formerly in uſe; 'the books contained a multitude of reſponſaria and antiphons, 'which they could not ſing: among them I found one of thoſe 'which were ordained by the apoſtolic Adrian. I knew that theſe 'books were older than that which remained in the Roman city, 'and though in ſome reſpects better inſtituted, yet they ſtood in need 'of ſome corrections, which, by the aſſiſtance of the Roman book, 'might made of them: I therefore took the middle way, and cor-'rected one by the other.' Notwithſtanding this labour of Amalarius to reform the antiphonary, Nivers aſſerts, that the corruptions of muſic were then ſo great, that it was very difficult to ſay where the Gregorian Chant lay *; and, after all, the corrections of it by

* The true cauſes of the firſt corruptions of the Cantus Gregorianus are plainly pointed out by the interpreter of Hugo Reutlingenſis, who, in the paſſage cited by Sir Henry Spelman, aſcribes it to the diſuſe of the ſtave, the cliffs, and other characters, neceſſary in the notation of muſic. To the ſame purpoſe Nivers relates, that they were not marked by notes, but by little points and irregular characters; which account is confirmed by ſome manuſcripts, in which the corrupt method of notation above hinted at does moſt evidently appear. Martini of Bologna has exhibited ſome curious examples of this kind, and has,

Amalarius Fortunatus were very ill received, as will appear by the following account of him.

SYMPHOSIUS AMALARIUS, or, as he is called by moſt writers, AMALARIUS FORTUNATUS was a deacon of Metz, and, as ſome ancient manuſcripts aſſert, alſo an abbot. There ſeems to have been another of the latter name, archbiſhop of Treves, with whom he is often confounded; they both flouriſhed about the middle of the ninth century. This of whom it is meant here to ſpeak was a great ritualiſt, and wrote four books on the ancient eccleſiaſtical offices, which he dedicated to Lewis the Debonnaire, by whom he ſeems to have been greatly favoured. In theſe books he gives myſtical reaſons for thoſe rites and ceremonies in divine worſhip, which wiſer men look on as mere human inventions. To give a ſpecimen of his manner of treating this ſubject, ſpeaking of the habits of the prieſts, he ſays, 'The 'prieſt's veſt ſignifies the right management of the voice; his albe, 'the ſubduing of the paſſions; his ſhoes, upright walking; his 'cope, good works; his ſtole, the yoke of Jeſus Chriſt; the ſur-'plice, readineſs to ſerve his neighbour; his handkerchief, good 'thoughts; and the pallium, preaching *.

with no leſs ingenuity than induſtry, from characters the moſt barbarous that can be conceived, and which were intended to expreſs the initial clauſes, and alſo the euouae of ſundry antiphons, as uſed in particular churches, extracted a meaning, and reconciled them to the true method of notation.

* An opinion ſomething like this, touching the myſtical ſignification of habits and the manner of wearing them, ſeems to have been entertained by the common-law judges in the reign of king James, as appears by a ſolemn decree or rule, made by all the judges of the courts at Weſtminſter, on the fourth day of June, 1635, for the purpoſe of appointing what robes they ſhould thenceforth wear, upon ordinary and ſpecial occaſions. In this decree mention is made of the ſcarlet caſting-hood, which is by the decree directed to be put above the tippet, for which it is given as a reaſon that 'juſtice Walmeſley and 'juſtice Warburton, and all the judges before, did wear them in that manner, and did 'declare, "that by wearing the hood on the right ſide and above the tippet, was ſignified "mere temporal dignity; and by the tippet on the left ſide only, the judges did reſemble "prieſts." Dugd. Origines Juridiciales, pag. 102.

The author from whom the above paſſage is cited, craves leave to mention a word or two concerning the collar of S S, worn by the chief juſtices and chief baron, ſome orders of knights, the kings at arms, and others. Touching this badge of diſtinction, he, upon the authority of Georgius Wicelius, relates, that it has a reference to two brethren, Roman ſenators, named Simplicius and Fauſtinus, who ſuffered martyrdom under the emperor Diocleſian; and gives the following deſcription of it from his author: 'It was the cuſtom 'of thoſe perſons (the ſociety of St. Simplicius) to wear about their necks ſilver collars, 'compoſed of double S S, which noted the name of St. Simplicius. Between theſe dou-'ble S S the collar contained twelve ſmall plates of ſilver, in which were engraved the 'twelve articles of the creed, together with a ſingle trefoyle. The image of St. Sim-

'plicius

But the book of Amalarius Fortunatus which more immediately relates to choral ſervice, or the muſic of the church, is intitled, De Ordine Antiphonarii. In this he vindicates the diſpoſition of the anthems, reſponſes, and pſalms, which he had made in the antiphonary, for the uſe of the churches in France. It ſeems, that in this and other of his works, he had cenſured the uſage of the church of Lyons: this drew on him the reſentment of two very able men, Agobard, archbiſhop of that city, and Florus, a deacon of the ſame church; the former of theſe wrote three treatiſes againſt his book of offices, and his correction of the antiphonary; and the latter accuſed him, in the councils of Quierci and Thionville, of maintaining erroneous opinions touching the moral and myſtical ſignifications of the ceremonies, and of inſiſting too ſtrenuouſly on the uſe of the Roman ritual, which, notwithſtanding its authority, had never been generally acquieſced in.

Agobard himſelf had corrected the antiphonary of his own church; and the treatiſes which he wrote againſt Amalarius, were not only a defence of thoſe corrections, but a cenſure of his adverſary. He ſays, that the poetical compoſitions of vain and fantaſtical men are not to be admitted into divine ſervice, the whole of which ought to be taken from the ſcriptures: he complains, that the clergy ſpent more time in the practice of ſinging than in the ſtudy of the holy ſcriptures, and the diſcharge of their duty in the miniſtry of the goſpel.

The writings of Amalarius upon the offices had given riſe to many very captious queſtions; and to this in particular, Whether it be lawful to ſpit immediately after receiving the euchariſt? His opinion on this point of theology is contained in one of his letters, wherein, after premiſing that he himſelf was very much troubled with phlegm, he holds it lawful to ſpit, when the communicant can no longer forbear that evacuation *.

From the time of the attack on him by Agobard, and Florus, his deacon, we hear no more of Amalarius Fortunatus; and there is good

‘ plicius hung at the collar, and from it ſeven plates, repreſenting the ſeven giſts of ‘ the Holy Ghoſt.’

Dugdale adds, ‘ that the reaſon of wearing this chain was in regard that theſe two ‘ brethren were martyred, by tying a ſtone with a chain about their necks, and caſting ‘ their bodies into the river Tiber.’

* Du Pin, Nouv. Biblioth. des Aut. Eccleſiaſt. Siec. IX.

reaſon

reaſon to believe, that immediately after it, his memory ſunk into oblivion.

Before we diſmiſs this ſubject of the Cantus Gregorianus, it may not be improper to mention, that it has ever been held in ſuch high eſtimation, that the moſt celebrated muſicians in every age ſince its firſt inſtitution, have occaſionally exerciſed themſelves in compoſing harmonies upon it; and numberleſs are the antiphons, hymns, miſereres, and other offices, which have one or other of the eccleſiaſtical tones for their fundamental harmony. In a collection of madrigals, intitled Muſica Divina, publiſhed by Pietro Phaleſio, at Antwerp, in 1595, is one compoſed by Gianetto Paleſtina, beginning 'Veſtiva 'i Colli,' in five parts, which is evidently a praxis on the fourth tone; and in 1694, Giov. Paolo Colonna, of Bologna, publiſhed certain of the pſalms, for eight voices, 'Ad ritum eccleſiaſticæ muſices con-'cinendi.'

CHAP. III.

IT is highly probable that from the time of its original inſtitution the cantus eccleſiaſticus pervaded the whole of the ſervice; but this at leaſt is certain, that after the final improvement of it by St. Gregory, all the accounts of the Romiſh ritual, and the manner of celebrating divine ſervice in the weſtern church, lead to the belief that, excepting the epiſtles and goſpels, and certain portions of ſcripture, and the paſſional or martyrology, the whole of the ſervice, nay that even the prayers and penitential offices, were ſung. Among the canons of Elfric, made anno 957 *, is the following.

'Now it concerns maſs-prieſts and all God's ſervants to keep 'their churches employed with divine ſervice. Let them ſing 'therein the ſeven tide-ſongs that are appointed them, as the ſynod 'earneſtly requires, viz. the uht-ſong, the prime-ſong, the undern-

* Elfric is ſuppoſed to have been archbiſhop of York about the time above mentioned, and Wulfin, to whom they are directed, biſhop of one of the ancient ſees of Dorcheſter or Shirburn, but which of the two is rather uncertain. This, as alſo ſome other collections of eccleſiaſtical laws here cited, are to be found in Sir Henry Spelman's Councils; but the extracts above given are from Mr. Johnſon's valuable and uſeful work, which in ſome reſpects is preferable to the former.

'ſong, the midday-ſong *, the noon-ſong, the even-ſong, the ſe-
'venth [or night] ſong.' Can. xix. What theſe ſeverally are, may be ſeen in a collection of eccleſiaſtical laws by the reverend and learned Mr. Johnſon of Cranbrook who has beſtowed a note on the paſſage.

The twenty-firſt of the ſame canons is in theſe words: 'The prieſt 'ſhall have the furniture for his ghoſtly work before he be ordained, 'that is the holy books, the pſalter, and the piſtol-book, goſpel-'book, and maſs-book, the ſong-book, and the hand-book, the 'kalendar, the paſconal †, the penetential, and the leſſon-book. It 'is neceſſary that the maſs-prieſt have theſe books; and he cannot 'be without them if he will rightly exerciſe his function, and duly 'inform the people that belongeth to him.'

Theſe injunctions may ſeem to regard the celebration of maſs, as well on feſtivals as on ordinary occaſions, in cathedral and other churches; nevertheleſs the practice of ſinging, by which in this place nothing can poſſibly be underſtood but the Cantus Gregorianus, was not reſtrained either to the ſolemn choral ſervice, or to that in pariſh-churches, but in ſhort it was uſed in the leſſer offices. In the Engliſh-Saxon homily for the birth-day of St. Gregory, the people are told that it was one of the injunctions of that father that the litany ſhould be ſung, and upon certain occaſions to the number of ſeven times a-day. Among the eccleſiaſtical laws of king Canute, who reigned from 1016 to 1035, is one whereby the people are required to learn the Lord's prayer and the creed, becauſe, ſays the law, 'Chriſt himſelf firſt *ſang* pater-noſter, and taught that 'prayer to his diſciples.' Mrs. Elſtob in her preface to the tranſlation of the above homily, pag. 36, has inſerted this law, and on the words Cpiſt ſealf ſange Pater Noſter, has the following note: 'Singing the ſervice was ſo much in practice in theſe times, [i. e. 'about the ſixth century, when Auſtin the monk was ſent by Gre-

* Midday-ſong was certainly at twelve o'clock, which we call noon; and the canon above mentions both a midday and a noon-ſong; this noon was the hora nona with the Latins, and our three o'clock. In the Shepherd's Almanac noon is midday, high noon three. Vide Johnſon's Canons, title King Edgar's Laws Eccleſiaſtical, in a note on law V. High noon is expreſsly mentioned in the old ballad of Chevy-Chaſe.

And long before highe noone they had
An hundrede fat buckes ſlaine;

† i. e. The Paſſional or Martyrology.

'gory

'gory into Britain] that we find the ſame word ſingan to ſignify 'both to pray and ſing, as in the preſent inſtance.'

Farther, among the canons of Elfric above-cited is one containing directions for viſiting the ſick, wherein that rule of St. James, 'And 'they ſhall pray over him,' is expreſſed in theſe words, ⁊ hi him ofer ſingon, that is, 'they ſhall ſing over them.' The paſſage above-cited is part of the thirty-firſt of Elfric's canons, and is in truth a paraphraſe on the words of St. James in his General Epiſtle, chap. v. ver. 13, 14, and, to give it at length, is as follows.

'If any of you be afflicted, let him pray for himſelf with an even 'mind, and praiſe his Lord. If any be ſick among you, let him 'fetch the maſs-prieſts of the congregation, and let them ſing over 'him, and pray for him, and anoint him with oil in the name of the 'Lord. And the prayer of faith ſhall heal the ſick, and the Lord 'ſhall raiſe him up; and if he be in ſins, they ſhall be forgiven him: 'confeſs your ſins among yourſelves, and pray for yourſelves among 'yourſelves that ye be healed.'

The ſeveral paſſages above-cited, as they ſhew in ſome meaſure the ancient manner of celebrating divine ſervice, and prove that almoſt the whole of it, particularly the leſſer offices, was ſung to muſical notes; ſo do they account for that care and aſſiduity with which the ſtudy of muſic appears to have been cultivated in the ſeveral monaſteries, ſchools, and univerſities throughout Europe, more eſpecially in France and England. That the knowledge of muſic was confined to the clergy, and that monks and preſbyters were the authors of moſt of the treatiſes on muſic now extant, is not ſo well accounted for by the general courſe of their lives, and the opportunities they had for ſtudy, as by this conſideration, it was their profeſſion; and to ſing was their employment, and in a great meaſure their livelihood *. The works of Chaucer and other old poets abound with alluſions to the practice of ſinging divine ſervice, and with evidences that a knowledge of the rudiments of ſinging was eſſential in every cleric, indeed little leſs ſo than for ſuch a one to be able to read. In the Viſions of Pierce Plowman, Sloth, in the character of a prieſt, among other inſtances of lazineſs and ignorance, confeſſes that he

* The ſtatutes of All-Souls college in Oxford, which are but declaratory of the uſage of ancient times, require that thoſe elected to fellowſhips ſhould be 'bene nati, bene veſtiti, et mediocritur docti in plano cantu.'

cannot perfectly repeat his Pater-noſter as the prieſt ſingeth it; and that though he had been in orders above thirty years, he can neither ſol-fa, nor ſing, nor read the lives of ſaints: the whole of his ſpeech, which is exceedingly humourous and characteriſtic, is here inſerted.

Than came Sloth, al beſlaberd, with two ſlimy eyne,
I muſt ſit ſaid the ſeg, or els I muſt nedes nap,
I mai not ſtond ne ſtoupe, ne without my ſtole knele,
Wer I brought a bed, but if my talend it made,
Should no ringing do me riſe, or I were ripe to dine,
He began benedicite with a belke, and on his breaſt knoked
And raskled and rored, and rut at the laſt.
Awak, reuk quod Repentaunce, and rape thee to the ſhrift.
If I ſhould die by this day, me lyſt not to looke:
I can not perfitly my pater noſter, as the priſt it ſingeth,
But I can rimes of Robenhod, and Randal of Cheſter
But of our Lord or our Lady, I lerne nothing at all;
I have made vowes xl, and forgotten hem on the morow;
I performed never penance, as the prieſt me hight,
Ne right ſory for my ſinnes, yet was I never;
And if I bid any beades, but it be of wrathe
That I tel with my tong, is two mile from my hart;
I am occupied every day, holy day and other
With idle tales at the ale, and other while in churches.
Gods peyne and his paſſion, ful ſelde I thinke thereon,
I viſited never feble men, ne fettred folk in pittes
I have lever hear an harlotry, or a ſommers game
Or leſſinges to laugh at, and helpe my neighboures
Than al that ever Marke made, Mathew Jhon and Lucas,
And vigiles and faſting daies, all theſe I let paſſe,
And lie in bed in lent, and my lemman in mine armes
Till mattens and maſſe be done, & than go I to the freres,
Com I to 'Ite miſſa eſt *' I hold me ſerved
I am not ſhriven ſometime, but if ſickenes it make

* i. e. See an explanation of theſe words in a ſubſequent note. The meaning of the above paſſage is, 'If I come before the inſtant the people are diſmiſſed from maſs, I 'hold it ſufficient.'

Nor

Not twiſe in two year, and than up gueſſe I ſhrive me
I have been prieſt and perſon paſſing thirty winter
Yet can I neither ſolfe nor ſing, ne ſainctes lives read
But I can finde in a fielde, or a furlong an hare
Better than in Beatus vir, or in Beati omnes
Conſtrue one clauſe, and ken it to my pariſhens
I can hold loue daies, and heare a revenes rekening
And in cannon and in decretals I cannot read a line
yf I bugge and borow ought, but if it be tailed
I forget it as ſonne, and if men me it aske
Six ſithes or ſeven, I forſake it with othes
And thus rene I true men, ten hundred times,
And my ſervauntes ſalary ſometimes is behind,
Ruth is to hear the rekening, when we ſhal mak account;
So with wicked wil and wirh wrath my workmen I pai.
yf any man do me benefite, or helpe me at nede
I am unkind againſt his curteſi, & cannot underſtand ic
For I have & have had ſome deale haukes maners
I am not lured with love, but if ought be under the thombe
That kindneſs that mine even chriſten, kid me ferther
Sixe ſithes I Sloth, have forgotten it ſithe.
In ſpech and in ſparing of ſpence, I ſpilt many a time
Both fleſh and fiſh, and many other vitailes
Both bread and ale, butter, milke, and cheſe
For Slouth in my ſervice til it might ſerve no man.
I ran about in youth, and gave me not to learning
And ever ſith have ben a beggar for my foule ſlouth *.

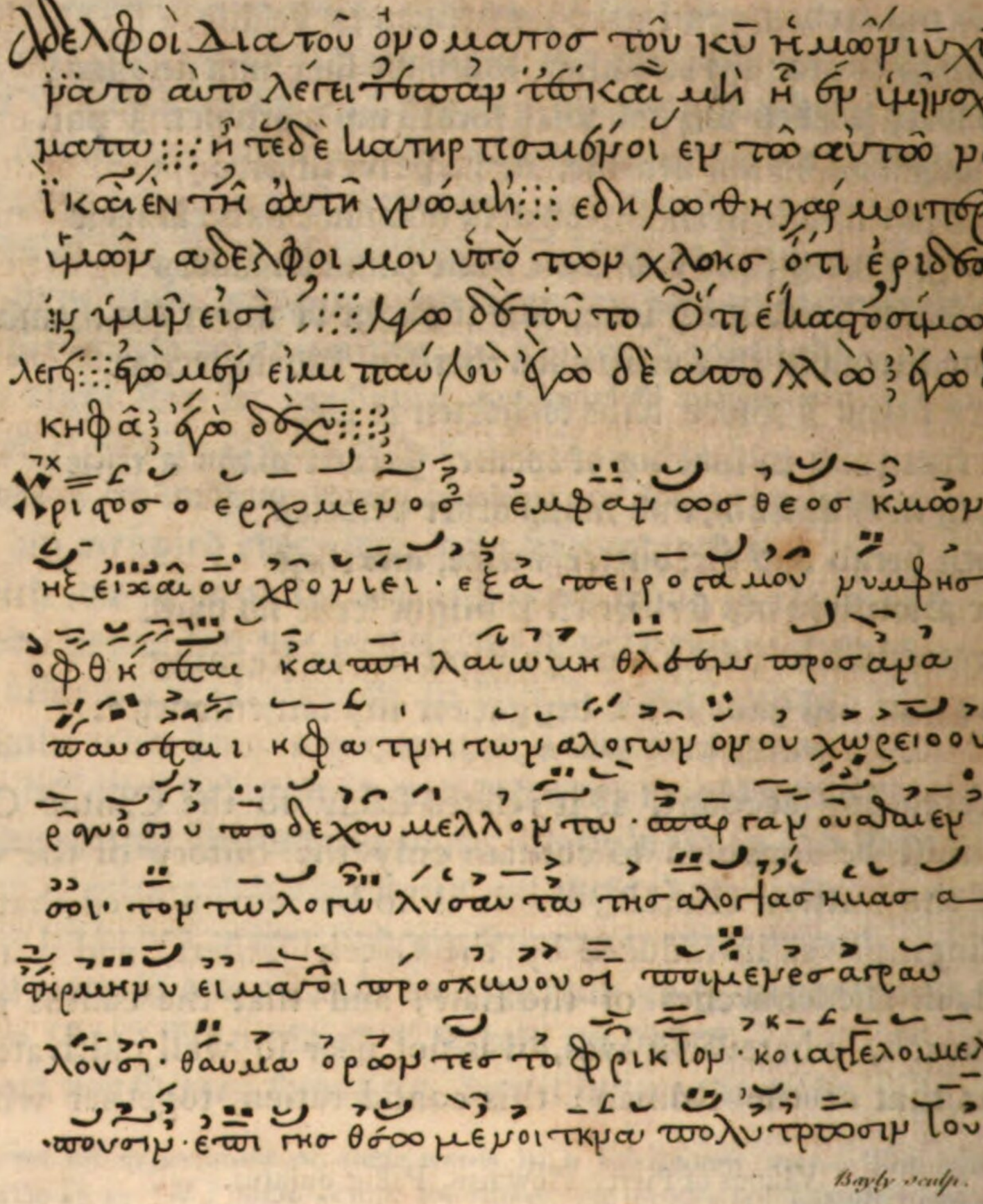
The foregoing account, as it relates ſolely to the Cantus Gregorianus, muſt be ſuppoſed to contain only the hiſtory of the choral muſic of the weſtern church; for it is to be remembered that antiphonal ſinging was introduced by the Greek fathers, and was firſt practiſed in the churches of the Eaſt; and that the cantus of the Greek church, whatever it was, was not near ſo well cultivated and refined as that of the Roman; this conſideration, together with the

* Viſions of Pierce Plowman, Paſſus quintus.

ſhort

ſhort duration of the eaſtern empire, may ſerve to ſhew how little is to be expected from an enquiry into the nature of the ancient Greek choral muſic. Voſſius ſays in general, that the Greek church made uſe of modulations different from thoſe of the weſtern *; but for a formula of them we are very much to ſeek. As to the method of notation made uſe of by the Greeks in after-times, it did not in the leaſt reſemble that of the Latins, and was widely different from that of the ancient Greeks. Montfaucon, in his Palœographia Græca, lib. V. cap. iii. gives the following curious ſpecimen of Greek muſical notation from a manuſcript of the eleventh century.

Pag. 390.



Bayly sculp.

* Ger. Voſſ. De Scientiis Mathematicis, cap. xxi. § 12.

Dr. Wallis had once in his hands a manuſcript, which upon examination proved to be a Greek ritual; it had formerly been part of the famous library founded at Buda by Matthæus Corvinus, king of Hungary, in 1485. In 1529 the city of Buda was taken by the Turks, and in 1686 retaken, after a long ſiege, by the forces of the emperor Leopold.

A deſcription of this manuſcript, and a general account of its contents is extant in a letter of Dr. Wallis to ſome perſon, probably the owner of it, who ſeems to have referred to the Doctor as being well ſkilled in muſic; the doctor's opinion of it may be ſeen in the copy of his letter inſerted at length at the bottom of the page. It has lately been diſcovered that the MS. abovementioned was the property of Mr. Humfrey Wanley, as appears by a letter of his to Dr. Arthur Charlett, inſerted alſo in the note, in which he offers to part with it to the univerſity of Oxford. It is to be conjectured that the univerſity declined purchaſing it, and that Mr. Wanley diſpoſed of it to the earl of Oxford, for in the printed Catalogue of the Harleian manuſcripts in the Britiſh Muſeum, No. 1613, is the following article.

* 'Sir, I have ſeen and curſorily peruſed that ancient Greek manuſcript which is ſaid 'to have been found in Buda, at the taking of that place from the Turks in the preſent 'war between the German emperor and the Turk.

'It is elegantly written in a ſmall Greek hand, and is judged to be at leaſt three hundred 'years old. The form of the letter is much different from that of thoſe which we now 'uſe, and not eaſy to be read by thoſe who are not acquainted with the Greek hand uſed 'in the manuſcripts of that age.

'It bears, after the firſt three leaves, this title Αρχη συν Θεω αγίω της παπαδικης Τεχνης, 'which I take to intimate thus much: Here begins, with the aſſiſtance of the ſacred Deity, 'the patriarchal art; for I take παπας then to ſignify as much as pope or patriarch, which 'is farther thus explained: ακολυθίαι ψαλλόμεναί εν Κονσαντινοπολει, συντιθεισαι παρα των 'κατα χαιρὸς ευρισκομενων εν αυτη ποιητων παλαιων τε και νεων. That is, the order of 'ſervices in Conſtantinople compoſed by poets, ſuch as from time to time have been there 'found, as well ancient as modern; ſo that it ſeems to be a pandect or general collection 'of all the muſical church-ſervices there uſed, as well the more ancient, as thoſe which 'were then more modern; after which it thus follows: ων η αρκη σημοιδια και αι τετων 'φωναι, beginning with the muſical notes and their ſounds.

'After which title we have accordingly for about five leaves, an account of the muſical 'notes then in uſe, their figures, names, and ſignifications; without which the reſt of the 'book would not be intelligible, and even as it is, it will require ſome ſagacity and ſtudy 'to find out the full import of it, and to be able to compare it with our modern muſic.

'The reſt of the book conſiſts of anthems, church-ſervices for particular times, and 'other compoſitions, according to the muſic of that age, near a thouſand I gueſs of one 'ſort or other, or perhaps more.

'The whole conſiſts of four hundred and thirteen leaves, cloſe written on both ſides in a 'ſmall Greek hand, in the ſhape or form of what we would now call a very large octavo, 'on a ſort of thick paper uſed in the eaſtern countries at that time.

'There is for the moſt part about twenty-eight lines in each page, that is fourteen lines 'of Greek text, according to which it is to be ſung; not ſuch as thoſe which we now uſe,

'nor

'Codex chartaceus in 8vo, ut ajunt, majori, diverſis manibus ſcrip-
'tus, et Græcorum more compactus; quem Dño Henrico Worſlejo in

'nor like thoſe of the more ancient Greeks, which they called of which Mei-
'bomius gives us a large account out of Alypius. But a new ſort of notes, later than thoſe
'of the ancient Greeks, but before thoſe of Guido Aretinus, which we now uſe; and com-
'monly two or three compoſitions in one leaf, with the author's name for the moſt part.

'I do not find in it any footſteps of what is now common in our preſent muſic; I mean
'compoſitions in two, three, four, or more parts; all theſe, for ought I find, being only
'ſingle compoſitions.

'That which renders it moſt valuable is this; we have of the more ancient Greek muſi-
'cians ſeven publiſhed by Marcus Meibomius in the year 1652, Ariſtoxenus, Euclid, Ni-
'comachus, Alypius, Gaudentius, Bacchius, and Ariſtides Quintilianus, before that of
'Martianus Capella in Latin. I have ſince publiſhed Ptolemy's Harmonics in the year
'1682, and I have now cauſed to be printed Porphyry's Commentary on Ptolemy and
'Bryennius, which are both finiſhed ſome while ſince, and they will thereby come abroad
'as ſoon as ſome other things are finiſhed which are to bear them company. All theſe,
'except Martianus Capella, in Greek and Latin, and theſe are thought to be all the Greek
'muſicians now extant.

'But all thoſe concern only the theoretical part of muſic, of the practical part of it,
'that is, muſical compoſitions of the ancient Greeks, it hath been thought till that, there
'was not one extant at this day, whereby we have been at a loſs what kind of compoſi-
'tions theirs were, and how theirs did agree or diſagree with what we now have, and it
'is a ſurprize to light at once upon ſo many of them.

''Tis true that all thoſe are more modern than thoſe of Ariſtoxenus, Euclid, Nicoma-
'chus, and others of the more ancient Greeks, being all ſince the times of Chriſtianity,
'and ſuch as were uſed in the Greek church of Conſtantinople: but they are much more
'ancient than any were thought to be extant. Your's

'JOHN WALLIS.'

Copy of Mr. Wanley's letter to Dr. Charlett.

'Honoured Sir, London, June 13, 1698.

'I cannot forbear ſending you word of the good fortune I have lately had to compaſs a
'Greek manuſcript, which contains the art of ſinging, with the names, powers, and cha-
'racters of their muſical notes, in great variety. And a collection of anthems, hymns,
'&c. ſet to their muſick by the beſt maſters of Conſtantinople, as intended and uſed to be
'ſung in their churches upon all the chief feſtivals of the year. It has likewiſe the muſi-
'cal part of their common liturgy with the notes; and both theſe, not only of the later
'muſic of the ſaid maſters, but very often the more antient too, uſed before their times.
'The names of theſe maſters prefixed to their compoſitions, are about threeſcore in num-
'ber, ſome of which I here ſet down: [Here follows a long liſt of Greek names, which
it is needleſs to inſert, as the MS. is yet in being and acceſſible.]

'I believe many of their names, and much more their works, might have been long
'enough unknown to us without the help of this book. Here is likewiſe a ſprinkling of
'the muſic uſed in the churches of Anatolia, Theſſalonica, Thebes, and Rhodes, beſides
'that piece called Περσικὸν, and other tracts.

'The MS. was taken from the Turks in plundering Buda, about the year 1686, and
'was afterwards bought by an Engliſh gentleman for 4l. but I lying here at great charges,
'cannot afford to ſell it ſo cheap. It is about 300 years old, fairly written upon cotton
'paper, taking up above four hundred leaves in a large 8vo

'The book ought to be placed in the publick library; and if, Sir, you are willing to
'think that the univerſity will conſider me for it, I will bring it along with me the next
'week: If not, I can be courted to part with it here upon my own terms.

'For the Rev. Dr. Charlett, I am reverend and honoured Sir,
'Maſter of Univerſity college Your moſt faithful and obedient ſervant,
'in Oxford. HUMFREY WANLEY.'

'Terra

'Terra Sancta peregrinanti dono dedet Notara (Νοταρᾶ an Νοταρίος;) 'tunc Metropolita Cæsarienſis; qui exinde, de mortuo doctiſſimo ſuo 'avunculo, factus eſt Patriarcha Hieroſolymitanus; adhuc, ni fallor, 'ſuperſtes. In illo habentur varia Eccleſiæ Grecæ Officia, Cantica, '&c. Græcè deſcripta, Notuliſq; Græcis Muſicalibus inſignita. Non 'iis dico, quæ priſcis ſeculis apud Ethnicos Poetas et Philoſophos in 'uſu fuerunt; quarum etiamnum nonnullæ reſtant quaſi e Naufragio 'Tabulæ: ſed alterius planè formæ, quas ante plurima ſecula intro-'ductas adhuc retinet hodierna Græcorum Eccleſia.'

Mr. Wanley has inſerted the rubrics in the order in which they occur; theſe are to be conſidered as ſo many diſtinct heads, and give occaſion for an explanation of many difficult words made uſe of in them, and alſo in the offices *; in which he diſcovers great learning and ſagacity.

* To give a few inſtances. 295. Τροπαρίον. Vox generica, et Canticis in Eccleſia Græca receptis communis: MODULUM ſemper vertit, et ANTIPHONAS Latinorum quadantenus reſpondere obſervat Goarus. Du Cang.

In Eccleſia Orientali, canebantur certis diebus certi CANONES, quos in TROPARIA dividebant plerumque 30. et nonnumquam plura: excepto uno MAGNO CANONE, qui 250 complectebatur. Suicer. ex Triodio.

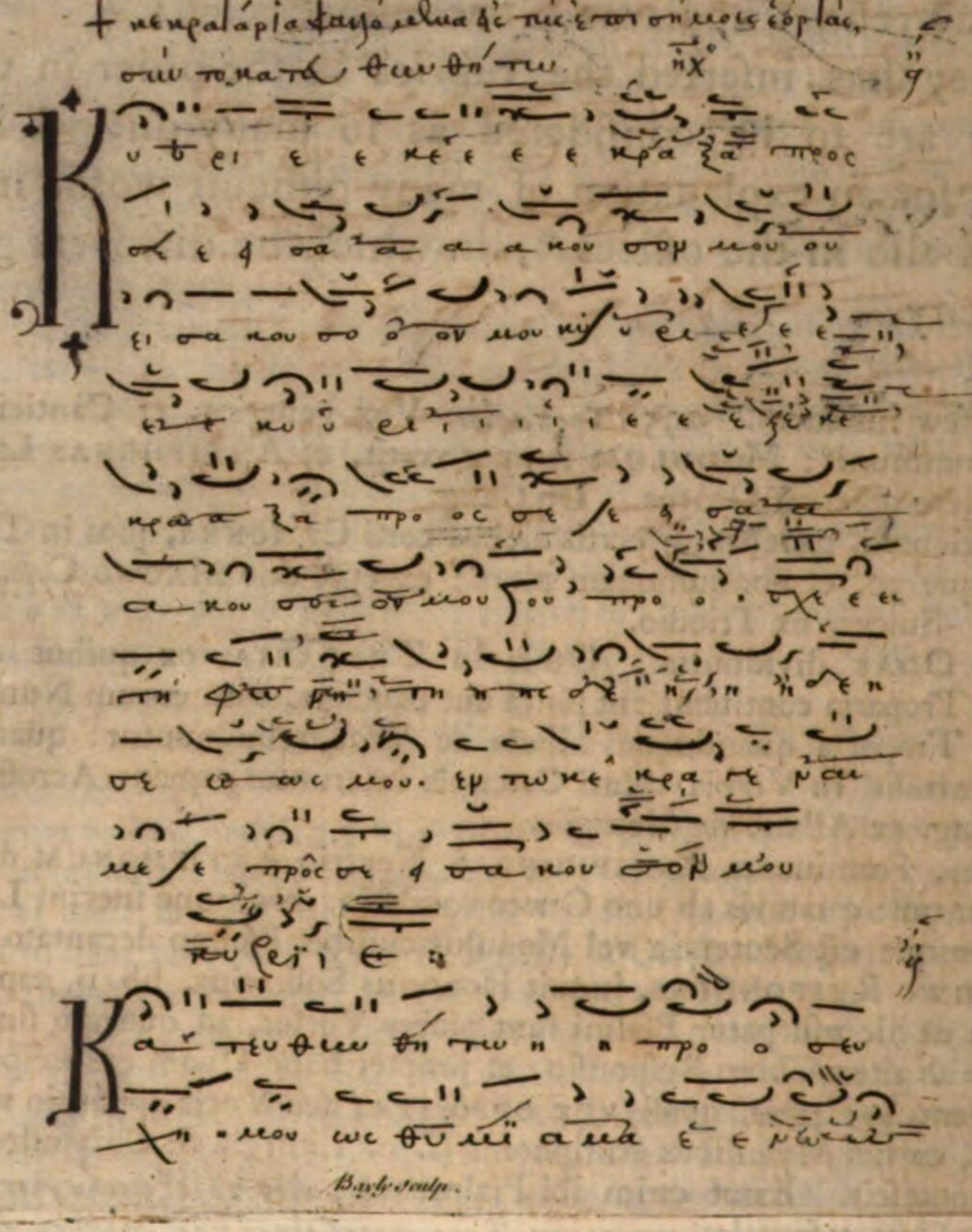
CANONES in ODAS dividuntur; ODÆ in TROPARIA, ex quibus componuntur. Singula namque Troparia continent aut plura aut pauciora, cum eorum Numerus determinatus non ſit. Troparia quandoque Libera ac Vaga relinquuntur: quandoque primis Litteris quaſi Annulis in Verbis veluti Catenula inſeruntur, quam Acroſtichida autores vocant. Du Cang. ex Allatio de Georgiis.

378. Αντίφωνον, Fœmineum ANTIPHONA à Neutrio ANTIPHONUM diſcrimen apud nos obtinet maximum: quamvis ab uno Græco vocabulo, utrumque fuerint Latini mutuati: ANTIPHONA namque eſt Sententia vel Modulus cuilibet Pſalmo decantato adjunctus, et quaſi EX OPPOSITO RESPONDENS, inquit Honorius Solitarius, lib. ii. cap. 17. ANTIPHONUM autem ut hic uſurpatur Pſalmi ſunt plures Verſus, ad quorum ſingulos, una et eadem ſit ſemper ab alteroChoro Reſponſio: et propter hanc Unam et Reciprocam Sententiam ſemper illatam, αντίφονον, quaſi VOX OPPOSITA, ſeu Vocis oppoſitio vocatur. Ejus forma qualis ſit, ex his Myſallibus Antiphonis (i. e. Liturgia S. Chryſoſtomi) fol. 105, et ſeq. poſitis innoteſcit. Extat enim ibi Pſalmus ἀγαθὸν τὸ ἐξομολογεισθαι τω κυρίω, cujus ſingulis verſibus reſpondet αντιφωνον Ταῖς πρεσβείαις τῆς θεοτόκε ϗ τὰ ἑξῆς, illis ſæpius OPPONENDUM. Quamvis fatear rem potius in adverſum ſenſum trahendam: cum enim Pſalmus ipſe vocatur αντιφωνον, ejus Verſus ſunt qui uni et eidem dicto, i. e. reſumpto (ἐφυμνιω ejus frequentius repetito) OPPONUNTUR. Vel certe, quia mutua et utriuſque Chori ad invicem Reſponſio: et voces jam auditæ, rurſum vel ex toto, vel ex parte, iterantur prout quoque in Latinis RESPONSORIIS contingit) αντίφωνον appellatur. Unde, tum propter Vocis Significationem, tum propter Compoſitionis formam, Latine RESPONSORIUM congrue reddi poſſet. Vetat tamen Uſus loquendi antiquus, ut Miſſæ Introitum alio quam ANTIPHONI vel ANTIPHONÆ Nomine dicatur, &c. Goar.

428. Τρισάγιον, TRISANCTUM, Hymni genus, cujus hæc erant Verba, Ἅγιος ὁ θεὸς, ἅγιος ἰσχυρὸς, ἅγιος ἀθάνατος, ἐλεησον ἡμᾶς in quo, ἅγιος ὁ θεὸς referebatur ad Deum Patrem; ἅγιος ἰσχυρὸς ad Deum Filium; ἅγιος ἀθάνατος ad Spiritum ſanctum. Vocatur etiam τρισαγιος ὑμνολογια, χερεβικος ὕμνος, ἀγγελων ὑμνολογια, τρισαγιος αινος,

But as a mere verbal deſcription of this MS. would fail to convey an adequate idea of the character in which it is written, or of the muſical notes, which are the principal object of the preſent enquiry, the initial and final pages of the volume are here given in that kind of tranſcript which the curious diſtinguiſh by the appellation of fac-ſimile.

Pag. 394.

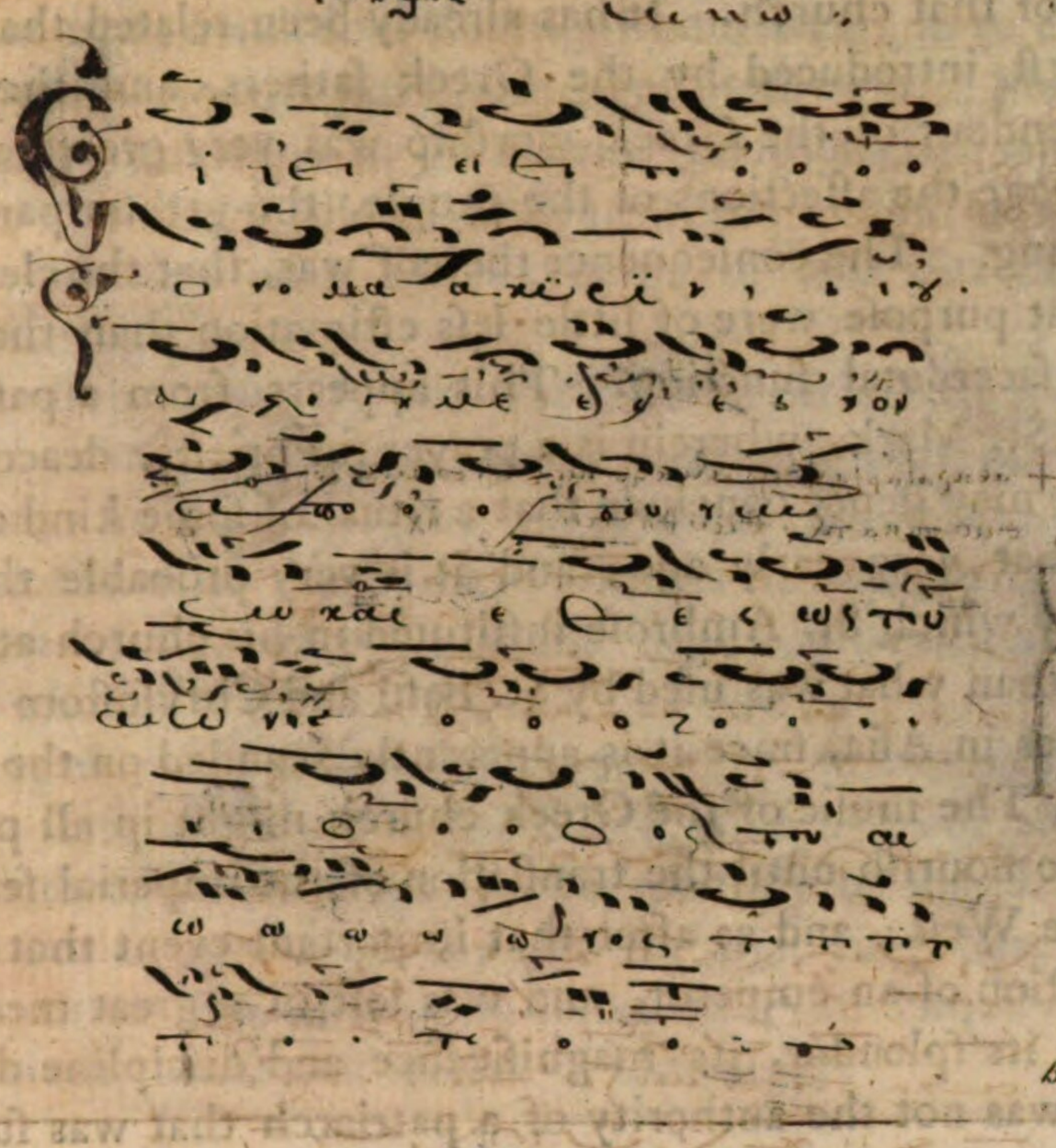


Bayly ſculp.

ἀγγελων Ὑμνωδια et τρισαγια φωνη. Anno enim Theodoſii Junioris quinto (vel trigeſimo ſecundum Cedrenum, &c) magno exiſtente Terræ Motu, et Muris corruentibus, quia Amalechitæ intra Urbem inhabitarent, et adverſus Hymnum hunc Blaſphemias proloquerentur: Preces et Supplicationes in Campo Tribunalis, Theodoſius cum Proclo Patriarcha inſtituit. Cum vero Κύριε ἐλέησον clamarent Horis aliquot continuis, Adoleſcentulus quidam in conſpectu omnium in aërem ſublatus eſt, audivitque Angelos clamantes, Ἅγιος ὁ θεὸς, ἅγιος ἰσχυρὸς, ἅγιος ἀθάνατος, ἐλεησον ἡμᾶς. Quod cum mox demiſſus narrâſſet, omnes eodem modo TRISAGIUM canere cœperunt, et ceſſavit Terræ Motus. Huic Hymno Imperator Anaſtaſius poſt illa ἅγιος ἀθάνατος addi voluit ὁ ϛαυροθεις ὑπὲρ ἡμεν, verum id cum magno Malo et ſuo, et Conſtantinopolitanorum.—Obſervandum tandem diſcrimen quod eſt inter το Τρισάγιον et HYMNUM EPINICION, in quo ſimiliter

Ἅγιος

Pag. 395.



Bayly Sculp.

It is very clear from the above-mentioned letter that Dr. Wallis looked upon manuſcripts of this kind as a very great curioſity; and this judgment of his is founded upon an opinion which he ſays prevailed at the time of giving it, that there was no ſuch thing as an ancient Greek muſical compoſition extant.

Ἅγιος canebatur, hunc in modum, ἅγιος, ἅγιος, ἅγιος κύριος σαβαὼθ.—Ergo τρισάγιον initio Liturgiæ ante Epiſtolæ Lectionem canebatur. Hymnus vero CHERUBICUS et ἐπινίκιος, poſt Catechumenorum et Pœnitentium dimiſſionem. Τρισάγιον quoque uſurpabant pro Sacroſancta Trinitate. Suicer

441. Χορός, proprie notat Canentium atque Saltantium collectam Multitudinem. notum eſt in Eccleſia hodie Pſalmodiam retineri, et quidem CHORO, quibuſdam in Locis, bifariam diviſo. Improprie notat Multitudinem amice conſpirantium in doctrina, &c. Suicer.

Χοροί dividebantur χοροὶ in δεξιόν, DEXTRUM, et ἀρίστερον, SINISTRUM. Triodium in Sabbato Sancto ἄρχεται ἄνθις μετὰ μέλης ὁ δεξιὸς ἦγεν ὁ πρῶτος χορός, in quo quidem DEXTRO ac PRIMO CHORO conſiſtit Sacerdos qui ſacræ Liturgiæ præſt. Du Cang.

The practice of dividing the chorus into two parts, and diſpoſing the ſingers on both ſides of the choir, ſeems beſt of any method to correſpond with the intention of antiphonal or reſponſive ſinging. But it is to be remarked that in the Romiſh ſervice there are many offices compoſed for four, and even eight choirs as they are termed. Theſe are in fact not diſtinct choirs, but rather ſo many ſmaller choruſſes, ſinging alternately with each other, and together at ſtated intervals; and theſe are alſo divided according to the

The cauſes of this ſcarcity of Greek ritual muſic are to be ſought in the hiſtory of that church. It has already been related that choral ſervice was firſt introduced by the Greek fathers, and that as the pomp and ſplendour of the Greek worſhip was very great, and calculated to engage the affections of the people, the greater part of the offices were ſung. The conſequence thereof was, that the clerks employed for that purpoſe were of little leſs eſtimation than thoſe that exerciſed the ſacerdotal function. This appears from a paſſage in the liturgy of St. Mark, wherein is a prayer for prieſts, deacons, and ſingers *. We may hence conclude that a ritual of ſome kind or other ſubſiſted in that very early age; and it is very probable that that kind of melody which St. Ambroſe inſtituted in his church at Milan, was no other than what was uſed by St. Baſil and Chryſoſtom in their ſeveral churches in Aſia, ſince it is apparently founded on the ancient Greek modes. The muſic of the Greek church might in all probability continue to flouriſh until the tranſlation of the imperial ſeat from the Eaſt to the Weſt; and as after that important event that church loſt the protection of an emperor, and was left in a great meaſure to ſhift for itſelf, its ſplendor, its magnificence and diſcipline declined apace, and it was not the authority of a patriarch that was ſufficient to ſupport it.

But the ruin of the Greek church was completed in the taking and ſacking of Conſtantinople by the Turks in the year 1453, when their libraries and public repoſitories of archives and manuſcripts were deſtroyed, and the inhabitants driven to ſeek ſhelter in the neighbouring iſlands, and ſuch other places as their conquerors would permit them to abide in.

From that time the Greek Chriſtians, excepting thoſe who inhabit the empire of Ruſſia, have lived in a ſtate of the moſt abſolute ſubjection to the enemies of true religion and literature, and this to

choral order, and ſtationed on both ſides of the choir. In our Engliſh ſervice-books the two different ſides are diſtinguiſhed by the names of the officers that ſuperintend them reſpectively; for inſtance, as the ſeat of the Dean is on the right, thoſe on that ſide are directed when to ſing by the word Decani; and as the ſtation of the præcentor or chanter is on the left, thoſe on that ſide are directed by the word Cantoris.

442. Κανονάρχης, PRÆFECTUS CANONUM, qui Monachos ad pſallendos in Vigiliis Canones excitabat. Suicer.

509. Πρωτοψάλτης, PRIMICERIUS CANTORUM; qui dictus etiam δομέστικος τῶν ψαλτῶν. Verum non habebant Eccleſiæ PROTO-PSALTAS, ſed DOMESTICOS Cantorum; cum PROTO-PSALTÆ propriè eſſent Cleri Palatini, &c. Du Cang.

* See a collection of the principal liturgies uſed in the celebration of the holy euchariſt, by Dr. Thomas Brett, pag. 34.

ſo great a degree, that the exerciſe of public worſhip is not permitted them but upon conditions ſo truly humiliating, as to excite the compaſſion of many who have been ſpectators of it. Maundrell in his Journey from Aleppo to Jeruſalem, mentions his viſiting a Greek church at a village called Bellulca, where he ſaw an altar of no better materials than dirt, and a crucifix of two bits of lath faſtened croſs-wiſe together *.

A modern traveller, Dr. Frederic Haſſelquiſt, who viſited the Levant in the year 1749, indeed mentions that in the church at Bethlehem he ſaw an organ, but it ſeems that it belonged to the Latin convent: as to the Greek Chriſtians he repreſents them as living in a ſtate of abſolute poverty and dejection in almoſt all the places that he viſited.

Laying all theſe circumſtances together, it will ceaſe to be a wonder that ſo few veſtiges of the Greek church-muſic are now remaining, whatever others there are may poſſibly be found in the Ruſſian ritual; but as no one can ſay how far that may have deviated from the primitive one, it is to be feared that an enquiry of this kind would elude the utmoſt efforts of induſtry †.

* 'Being informed that here were ſeveral Chriſtian inhabitants in this place, we went 'to viſit their church, which we found ſo poor and pitiful a ſtructure, that here Chriſti-'anity ſeemed to be brought to its humbleſt ſtate, and Chriſt to be laid again in a man-'ger. It was only a room of about four or five yards ſquare, walled with dirt, having 'nothing but the uneven ground for its pavement; and for its ceiling only ſome rude 'traves laid athwart it, and covered with buſhes to keep out the weather. On the eaſt 'ſide was an altar built of the ſame materials with the wall; only it was paved at top with 'pot-ſherds and ſlates, to give it the face of a table. In the middle of the altar ſtood a 'ſmall croſs compoſed of two laths nailed together in the middle: on each ſide of which 'enſign were faſtened to the wall two or three old prints, repreſenting our bleſſed Lord and 'the bleſſed Virgin, &c. the venerable preſents of ſome itinerant friars, that had paſſed 'this way. On the ſouth ſide was a piece of plank ſupported by a poſt, which we under-'ſtood was the reading-deſk, juſt by which was a little hole commodiouſly broke through 'the wall to give light to the reader. A very mean habitation this for the God of hea-'ven! but yet held in great eſteem and reverence by the poor people; who not only come 'with all devotion hither themſelves, but alſo depoſite here whatever is moſt valuable to 'them in order to derive upon it a bleſſing. When we were there the whole room was 'hanged about with bags of ſilk-worms eggs; to the end that by remaining in ſo holy a 'place, they might attract a benediction and a virtue of encreaſing.' Maundrell's Journey from Aleppo to Jeruſalem, pag. 7.

† A gentleman, who has lately obliged the world with an account of the Greek church, in Ruſſia, ſpeaking of the ritual of the Ruſſians, takes notice that the muſic of their ſervice books is written on a ſtave of five lines, from which he rightly infers that the eccleſiaſtical tones as ſung by them are either corrupted, or have widely deviated from their original inſtitution. The Rites and Ceremonies of the Greek Church in Ruſſia, by Dr. John Glen King, pag. 43, in not.

CHAP.

CHAP. IV.

ISIDORE, biſhop of Seville, is frequently ranked among the writers on muſic, for this reaſon, as it ſeems, that he was the author of Originum, ſive Etymologiarum, a kind of epitome of all arts and ſciences, in which are ſeveral chapters with the following titles, as Cap. i. De Muſica et ejus Nomine. Cap. ii. De Inventoribus ejus. Cap. iii. Quid ſit Muſica. Cap. iv. De tribus Partibus Muſicæ. Cap. v. De triformi Muſicæ Diviſione. Cap. vi. De prima Diviſione Muſicæ harmonica. Cap. vii. De ſecunda Diviſione organica. Cap. viii. De tertia Diviſione rythmica. Cap. ix. De Muſicis Numeris; and alſo a Treatiſe on the Eccleſiaſtical Offices, in both of which there are many things relating to muſic, and in the former eſpecially, many etymologies of muſical terms, and names of muſical inſtruments. His father was Severianus, a ſon of Theodoric king of Italy; he ſucceeded his brother Leander in the biſhopric of Seville about the year 595, and governed that church near forty years: he was very learned in all ſubjects, more eſpecially in geometry, muſic, and aſtrology; his book on the Offices contains the principal points of diſcipline and eccleſiaſtical polity. Moſheim in his chronological tables makes him the principal compiler of the Moſarabic liturgy, which is the ancient liturgy of Spain. He died in the year 636, and has a place in the calendar of Romiſh ſaints.

Of the introduction of muſic into the church-ſervice, of the inſtitution of the four tones by St. Ambroſe, and of the extenſion of that number to eight by St. Gregory, mention has been made; we are now to ſpeak of another very conſiderable improvement of church-muſic, namely, the introduction of that noble inſtrument the organ, which we are told took place about the middle of the ſeventh century. Authors in general aſcribe the introduction of organs into churches to pope Vitalianus, who, as Du Pin, Platina, and others relate, was advanced to the pontificate in A. C. 663: the enemies of church-muſic, among whom the Magdeburg commentators are to be numbered, invidiouſly inſinuate that it was in the year 666 that organs were firſt uſed in churches, from whence they infer the unlawful-

neſs

neſs of this innovation, as commencing from an era that correſponds with the number of the beaſt in the Apocalypſe: but the wit of this ſarcaſm is founded on a ſuppoſition that, upon enquiry, will appear to be falſe in fact; for though it is uncontroverted that Vitalianus introduced the organ into the ſervice of the Romiſh church, yet the uſe of inſtruments in churches was much earlier; for we are told that St. Ambroſe joined inſtruments of muſic with the public ſervice in the cathedral church of Milan, which example of his was ſo well approved of, that by degrees it became the general practice of other churches, and has ſince obtained in almoſt all the Chriſtian world beſides. Nay, the antiquity of inſtrumental church-muſic is ſtill higher, if we may credit the teſtimony of Juſtin Martyr and Euſebius, the latter of whom lived fifty, and the former two hundred years before the time of St. Ambroſe. But to return:

Sigebert relates that in the year 766 the emperor Conſtantine * ſent an organ as a preſent to Pepin, then king of France, though the annals of Metz refer to the year 757; from hence ſome with good reaſon date the firſt introduction of the organ into that kingdom, but it was not till about the year 826 that organs became common in Europe.

Whoever is acquainted with the exquiſite mechaniſm of this inſtrument, and conſiders the very low ſtate of the manual arts at that time, will hardly be perſuaded that the organ of the eighth century bore any very near reſemblance to that now in uſe. Zarlino, in his Sopplimenti Muſicali, libro VIII. pag. 290, has beſtowed great pains in a diſquiſition on the ſtructure of the ancient organ; the occaſion of it he ſays was this, a lady of quality, Madonna Laura d'Eſte, in the year 1571, required of Zarlino, by his friend Franceſco Viola, his ſentiments of the organ in general, and whether he took the modern and the ancient inſtrument of that name to be alike or different: in giving his opinion on this queſtion he attempts a deſcription of the hydraulic organ from Vitruvius, which he leaves juſt as he found it; he then cites a Greek epigram of Julian the Apoſtate, who lived about the year 364, in which an organ is deſcribed. A tranſla-

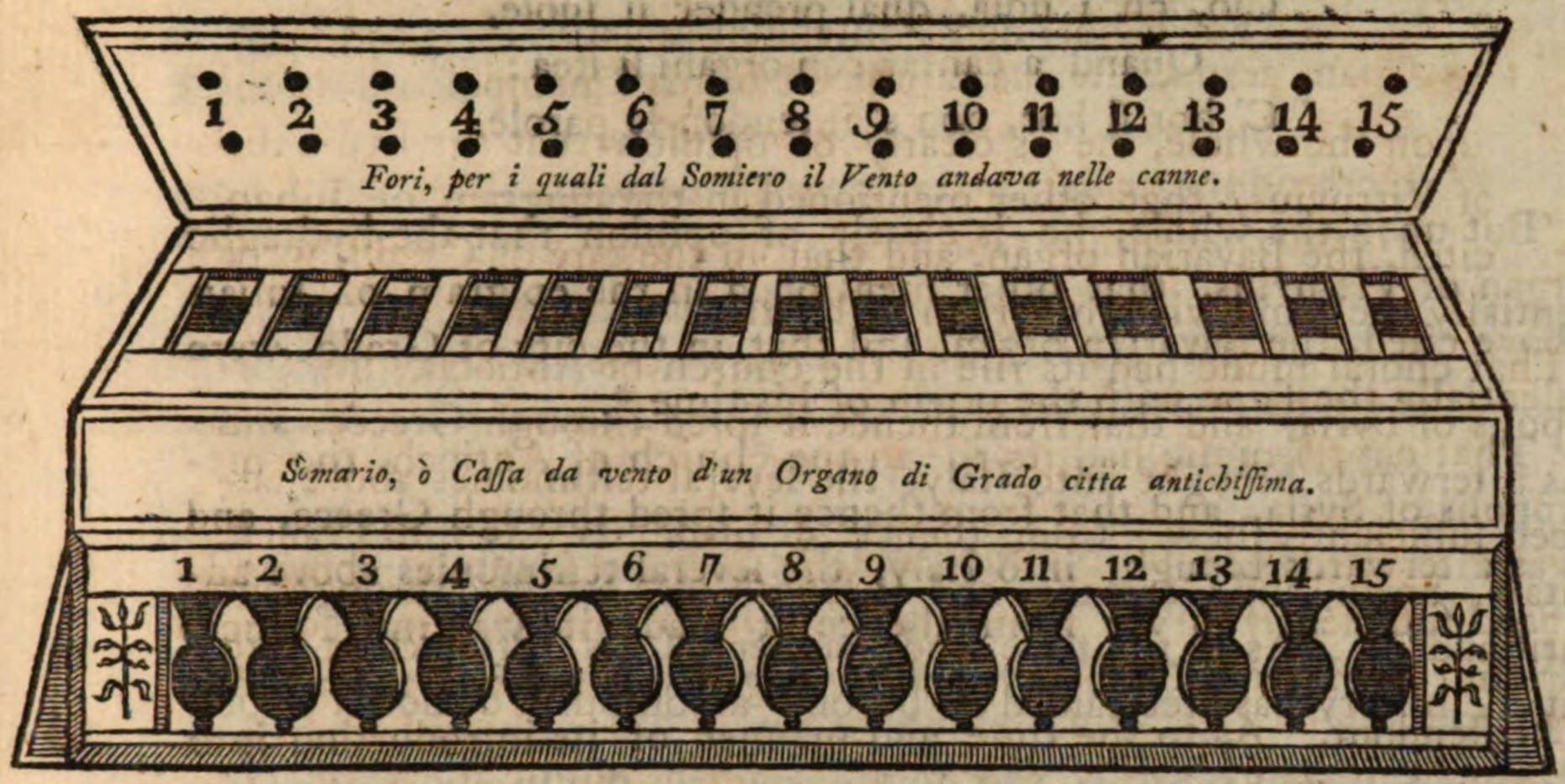
* Surnamed Copronymus, becauſe he is ſaid to have defiled the font at his baptiſm. Moſh. vol. II. pag. 92. in not.

Other writers ſpeak particularly, and ſay that the firſt uſe of organs in the weſtern church was at Acon. Iſaacſ. Chron. Anno Chriſti 826. Church Story.

tion of this epigram in the following words is to be found in Merſennus, lib. III. De Organis, pag. 113.

Quam cerno, alterius naturæ eſt fiſtula: nempe
Altera produxit fortaſſe hæc ænea tollus.
Horrendum ſtridet, nec noſtris illa movetur
Flatibus, et miſſus taurino e carcere ventus
Subtus agit læves calamos, perque ima vagatur.
Mox aliquis velox digitis, inſignis et arte
Adſtat, concordes calamis pulſatque tabellas:
Aſt illæ ſubito exiliunt, et carmina miſcent.

As to the organ of the moderns, he ſays the common opinion is that it was firſt uſed in Greece, and from thence introduced into Hungary, and afterwards into Bavaria; but this he refutes, as he does alſo the ſuppoſed antiquity of an organ in the cathedral church of Munich, pretended to be the moſt ancient in the world, with pipes of one entire piece of box, equal in magnitude to thoſe of the modern church organ: he then ſpeaks of the ſommiero of an organ in his poſſeſſion that belonged to a church of the nuns in the moſt ancient city of Grado, the ſeat of a patriarch before the ſacking of it by Pepo the patriarch of Aquileia, in the year 580. This ſommiero he deſcribes as being about two feet long, and a fourth of that meaſure broad, and containing only thirty pipes and fifteen keys, but without any ſtop; the pipes he ſays were ranged in two orders, each containing fifteen, but whether they were tuned in the uniſon or octave, as alſo whether they were of wood or metal, he ſays is hard to gueſs: he ſays farther that this inſtrument had bellows in the back part, ſuch as are to be ſeen in the modern regali, and exhibits a draft of this inſtrument in the following form.



Fori, per i quali dal Somiero il Vento andava nelle canne.

Somario, ò Caſſa da vento d'un Organo di Grado citta antichiſſima.

Zarlino ſpeaks alſo of an ancient organ in the church of St. Anthony of Padua, of a convenient bigneſs, which had many orders of pipes, but no ſtops; and both theſe inſtruments he makes to be much more ancient than that of Munich in Bavaria; concerning the accounts of which he ſeems to be diſſatisfied; for as to the pipes, he ſays there are no box-trees, except ſuch as grow in the country of Preſter John, of a ſize ſufficient to make pipes of one piece ſo large as thoſe are ſaid to be; and that, after ſuch were found, an organ ſo conſtructed as that a ſingle pipe ſhould require a whole tree, is not eaſily to be conceived of.

He farther takes ſome pains to ſhew the error of thoſe who imagine that the organ mentioned by Dante, in the ninth canto of his Purgatory, was different in many reſpects from that of the ancients. The paſſage in Dante is an imitation of Lucan, lib. III. 'Tunc rupes tarpeia ſonat.'

Non ruggiò ſi, ne ſi moſtro ſi acra
Tarpea; come tolto le fu' il buono
Metello; donde poi rimaſe maca.
I mi rivolſi attento al primo tuono;
Et Te Deum laudamus mi parea.
Udir in voce miſta al dolce ſuono.

Tal imagin a punto mi rendea
Ciò, ch' i udia, qual prender ſi ſuole,
Quand' a cantar con organi ſi ſtea:
C' hor ſi hor, non s' intendon le parole.

But upon the whole, he is clearly of opinion that the hydraulic organ of Vitruvius, that other mentioned in the epigram of Julian above cited, the Bavarian organ, and that in the city of Grado, were eſſentially the ſame with the organ of his time *.

That choral muſic had its riſe in the church of Antioch, the metropolis of Syria, and that from thence it ſpred through Greece, and was afterwards brought into Italy, the ſeveral teſtimonies above adduced ſufficiently ſhew: from thence it made its way into France, Britain, Spain, and Germany, and at length was received throughout Chriſtendom. As to the time and manner of its introduction into Britain, hiſtory has aſcertained it beyond a poſſibility of doubt; for we are expreſsly told, that at the time when Auſtin the monk arrived here, charged with a commiſſion to convert the inhabitants of Britain to Chriſtianity, ſingers attended him: and ſo watchful were the Roman pontiffs over its progreſs in this iſland, that in little more than half a century, one of the moſt excellent chanters that Rome afforded was ſent hither, by Agatho, to reform ſuch abuſes as in that ſhort period he might find to have crept into it. That it was received with great eagerneſs by the people of this country, there are many reaſons for thinking; for, firſt, their fondneſs for muſic of all kinds

* Merſennus ſeems to carry the antiquity of the organ farther back than Zarlino has done in the paſſage above cited, and to think that not only the hydraulic but the pneumatic organ, was in uſe among the Romans, though he has left it to the antiquaries to aſcertain the preciſe time; for ſpeaking of the epigram made in its praiſe by the emperor Julian, and which is inſerted in his [Merſennus's] Latin work, he relates 'that the Sieur 'Naudè had ſent him from the Matthei gardens at Rome, the form of a little cabinet of 'an organ, with bellows like thoſe made uſe of to kindle a fire, and a repreſentation of a 'man placed behind the cabinet blowing the bellows, and of a woman touching the keys.' He ſays, 'that on the bottom of the cabinet was the following inſcription: L. APISIUS 'C. F. SCAPTIA CAPITOLINUS EX TESTAMENTO FIERI MONUMEN. 'JUSSIT ARBITRATU HEREDUM MEORUM SIBI ET SUIS; concerning 'which, he adds, the antiquarians may conjecture what they can; for that it is ſufficient 'that he has given the practice of his own age, which, he ſays, by far ſurpaſſes any thing 'that the ancients have left behind on this ſubject.' Harm. Univer. lib. VI. pag. 387.

The monument above ſpoken of has been recovered. Probably it is extant in ſome one or other of the collections of antiquities, publiſhed ſince the time of Merſennus, but the following repreſentation of it was found among the papers of Nicola Franceſco Haym, the author

was remarkably great; Giraldus Cambrenſis aſſerts, almoſt in poſitive terms, that the natives of Wales and the northern parts of Great Britain were born muſicians.

author of Il Teſoro Britannico delle Medaglie Antiche, and as it correſponds exactly with the deſcription of it by Merſennus, it is here inſerted.

The ſame author takes occaſion to mention an organ deſcribed in an epiſtle to Dardanus, in the fourth volume of the works of St. Jerome, which, from the many barbariſms that appear in it, he ſays, ought not to be attributed to that excellent man. This organ, he ſays, is repreſented as having twelve pair of bellows and fifteen pipes, and a wind-cheſt, made of two elephant ſkins; and as yielding a ſound as loud as thunder, which might be heard at more than a thouſand paces diſtance. Merſennus adds, that in the ſame epiſtle mention is made of an organ at Jeruſalem, which was heard at the Mount of Olives. He ſays, there are many other inſtruments deſcribed in the ſame epiſtle; but he remarks, that if the elephant ſkins above mentioned were ſewed together, and were fitted by bellows, the inſtrument was more properly a cornamuſa, or bagpipe, than an organ.

To this account of organs of a ſingular conſtruction, the following may be added of ſome leſs ancient. Fuller, in his Worthies of Denbighſhire, pag. 33, mentions an organ with golden pipes. Leander Alberti, in his Deſcription of Italy, ſays, he ſaw one, in the court of the duke of Mantua, of alabaſter; and another at Venice, made all of glaſs; and Pope Sylveſter the Second made an organ that was played on by warm water. See Oldys's Britiſh Librarian, N° 1. pag. 51.

Beſides this, there are proofs in hiſtory that in a very ſhort time after its firſt planting amongſt us, muſic was obſerved to flouriſh; and that, in ſhort, it loved the ſoil, and therefore could not fail to grow.

It was in the cathedral church of Canterbury that the choral ſervice was firſt introduced; and till the arrival of Theodore, and his ſettlement in that ſee, the practice of it ſeems to have been confined to the churches of Kent; but after that, it ſpred over the whole kingdom. The clergy made muſic their ſtudy, they became proficients in it, and, differing perhaps in that reſpect from thoſe of other countries, they diſſeminated the knowledge of it among the laity. Hollinſhed, after Bede, deſcribes the progreſs of ſinging in churches in theſe words:

'Alſo, whereas before-time there was in a manner no ſinging in 'the Engliſhe churches, except it were in Kent, now they began in 'every church to uſe ſinging of divine ſervice, after the ryte of the 'church of Rome. The archbiſhop Theodore, finding the church of 'Rocheſter void by the death of the laſt biſhop, named Damian, he 'ordeyned one Putta, a ſimple man in worldly matters, but well in-'ſtructed in eccleſiaſtical diſcipline, and namely well ſeene in ſong, 'and muſicke to be uſed in the church, after the manner as he had 'learned of Pope Gregories diſciples*.'

After this, viz. in 677, Ethelred, king of the Mercians, invaded the kingdom of Kent with a great army, deſtroying the country before him, and amongſt other places the city of Rocheſter; the cathedral church thereof was alſo ſpoiled and defaced, and Putta driven from his reſidence; upon which, as the ſame hiſtorian relates, 'he wente unto 'Scroulfe, the biſhop of Mercia, and there obteyning of him a ſmall 'cure, and a portion of ground, remayned in that country; not once 'labouring to reſtore his church of Rocheſter to the former ſtate, 'but went aboute in Mercia to teach ſong, and inſtruct ſuch as 'would learne muſicke, whereſoever he was required, or could get 'entertainment.'†

* Firſt volume of the Chronicles of England, Scotland, and Ireland, pag. 178, col. ii. edit. 1577.

† Ibid. pag. 181.

CHAP.

CHAP. V.

THE ſeveral improvements herein before enumerated, related ſolely to that branch of muſic which thoſe who affect to uſe the terms of the ancients, called the Melopœia; what related to the meaſures of time, which, as has been ſhewn, were regulated ſolely by the metrical laws, as they ſtood connected with poetry, or, to uſe another ancient term, the rhythmopœia was ſuffered to remain without innovation till the beginning of the fourteenth century, as it is ſaid, when John De Muris, a doctor of the Sorbonne, and a native of England, though the generality of writers ſuppoſe him to have been a Norman, invented characters to ſignify the different lengths of ſounds, and, in ſhort, inſtituted a ſyſtem of metrical muſic.

It has already been mentioned, that till within theſe few years it was a diſpute among the writers on muſic, whether the ancients, by whom we are to underſtand the Greek harmonicians and their followers, were acquainted with muſic in conſonance, or not: the ſeveral arguments of each party have been ſtated, and, upon a compariſon of one with the other, it does moſt clearly come out, that muſic in conſonance, though as to us it be of great antiquity, is, with reſpect to thoſe of whom we are now ſpeaking, a modern improvement.

In fixing the æra of this invention, thoſe who deny that it was known to the ancients are almoſt unanimous in aſcribing it, as indeed they do the invention of the polyplectral ſpecies of inſtruments, which are thoſe adapted to the performance of it, to Guido Aretinus. Kircher was the firſt propagator of this opinion *, which he confeſſes is founded on a bare hint of Guido; but in this he is miſtaken, both in his opinion and in the fact which he aſſigns as a reaſon for it; for neither in the Micrologus nor in the other tract of Guido, intitled, Argumentum novi Cantus inveniendi, of both which a very particular account will be given hereafter, is there the leaſt intimation of a claim to either of the above inventions.

* Muſurg. tom. I. pag. 215.

Not

Not to inſiſt farther on this miſtake, the fact is, that ſymphoniac muſic was known in the eighth century, and that Bede does very particularly mention a well-known ſpecies of it, termed Deſcant: and this alone might ſuffice to ſhew that muſic in conſonance, though unknown to the ancient Greeks, was yet in uſe and practice before the time of Guido, who flouriſhed not till the beginning of the eleventh century; for what are we to underſtand by the word Deſcant, but muſic in conſonance?

But leſt a doubt ſhould remain touching the nature of the practice which the word Deſcant is intended to ſignify, let us attend to a very particular deſcription of it, contained in an ancient manuſcript, formerly part of the Cotton library, but which was deſtroyed by the accident of fire which happened ſome years ago at Aſhburnham-houſe, where it was depoſited. The paſſage above mentioned may be thus tranſlated *.

'If two or three deſcant upon a plain-ſong, they muſt uſe their 'beſt endeavours to begin and proceed by different concordances; 'for if one of them ſhould concur with another, and ſing the ſame 'concord to the plain-ſong, then ought they immediately to conſti-'tute another. If you would deſcant under the plain-ſong, in the 'duple, [i. e. octave] in the ſixth, the fifth, the third, the twelfth, 'or in the fifteenth, you ought to proceed in the ſame manner as you 'would were you to deſcant above the plain-ſong; whoever ſings 'above it muſt be experienced in the grave ſounds, their na-'ture and ſituation; for on this the goodneſs of the harmony in a 'great meaſure depends. Another method of deſcanting is practiſed, 'which, if it be well pronounced, will, though eaſy, appear very ar-'tificial, and ſeveral will ſeem to deſcant on the plain-ſong, when in 'reality one only ſhall deſcant, and the others modulate the plain-ſong 'in different concordances: it is this, let there be four or five 'ſingers, and let one begin the plain-ſong in the tenor; let the ſe-'cond pitch his voice in the fifth above, the third in the eighth, and 'the fourth, if there be four beſides him who ſings the tenor or plain-'ſong, in the twelfth, and all begin and continue in theſe con-'cordances to the end; only let thoſe who ſing in the eighth and

* From a copy made for the uſe of Dr. Pepuſch. Vide Mr. Caſley's catalogue

'twelfth

'twelfth break and flower the notes in ſuch manner as may beſt grace 'the meaſure; and note well, that whoſoever ſings the tenor muſt 'pronounce the notes full in their meaſure, and that he who deſcants 'muſt avoid the perfect, and take only the imperfect concords, 'namely, the third, ſixth, and tenth, both aſcending and deſcending; 'and thus a perſon who is ſkilled in the practice of deſcant, and 'having a proper ductility of voice, may make great melody with 'others, ſinging according to the above directions; and for this kind 'of ſinging four perſons are ſufficient, provided there be one to 'deſcant continually, in a twelfth above the plain-ſong.'

Morley, in his Introduction, pag. 70, ſpeaking of the word Deſcant, indeed ſays, that 'it is a word uſurped of the muſitions in divers 'ſignifications;' yet he adds, 'that it is generally taken for ſinging a 'part extempore, on a playne-ſong; ſo that when a man talketh of a 'deſcanter, it muſt be one that can extempore ſing a part upon a 'playne-ſong.'

The practice of deſcant, in whichſoever of theſe two ſenſes the word is accepted, may reaſonably be ſuppoſed to have taken its riſe from the choral ſervice, which, whether we conſider it in its primitive ſtate, as introduced by St. Ambroſe, or as improved by pope Gregory, conſiſted either of that plain and ſimple melody which is underſtood when we ſpeak of the Ambroſian or Gregorian chant, or of compoſitions of the hymnal kind, differing from the former, in that they were not ſubject to the tonic laws which at different periods had been laid down by thoſe fathers of the church.

Continual practice and obſervation ſuggeſted to thoſe whoſe duty obliged them to a conſtant and regular attendance at divine ſervice, the idea of a polyphonous harmony; by means whereof, without diſturbing the melody, the ear might be gratified with a variety of concordant ſounds, uttered by a number of voices; and indeed little leſs than a diſcovery of this nature was to be expected from the introduction of muſic into the church, conſidering the great number of perſons whoſe duty it became to ſtudy and practiſe it; conſidering alſo, the great difference, in reſpect of acuteneſs and gravity, between the voices of men and boys; and, above all, that nice diſcriminating ſenſe of harmony and diſcord, reſulting from an attention to the ſound of that noble inſtrument the organ. Platina has fixed the

æra

æra when the organ was firſt introduced into churches at the year 660, and gives the honour of it to Vitalianus; and in leſs than half a century afterwards, we diſcover the advantages ariſing from it, in that which is the ſubject of the preſent enquiry, the invention of a kind of muſic conſiſting of a variety of parts, called deſcant, the nature whereof is explained above, and is mentioned by Bede, who flouriſhed at the beginning of the eighth century, and not only was extremely well ſkilled in the ſcience of muſic, but ſpent the far greater part of his life in the ſtudy and practice of it.

An Italian writer of good authority *, whoſe prejudices, if he had any, did not lead him to favour the moderns, has gone farther, and aſcribed the uſe of the term to our countryman; and there is extant, in the Cambriæ Deſcriptio of Giraldus Cambrenſis, a relation of a practice that prevailed in his time among the inhabitants of this country, not inconſiſtent with the ſuppoſition that either Bede himſelf, or ſome of the brethren of the monaſtery where he reſided, might be the inventors of muſic in conſonance.

The relation of Giraldus Cambrenſis above referred to is to the following effect:

'In the northern parts of Britain, beyond the Humber and on the 'borders of Yorkſhire, the people there inhabiting, make uſe of a 'kind of ſymphoniac harmony in ſinging, but with only two diſ-'ferences or varieties of tones or voices. In this kind of modulation, 'one perſon [ſubmurmurante] ſings the under part in a low voice, 'while another ſings the upper, in a voice equally ſoft and pleaſing. 'This they do, not ſo much by art as by a habit, which long practice 'has rendered almoſt natural; and this method of ſinging is become 'ſo prevalent amongſt theſe people, that hardly any melody is ac-'cuſtomed to be uttered ſimply, or otherwiſe than variouſly, or in 'this twofold manner *.'

* Gio. Bat. Doni, in his treatiſe De Generi e de Modi della Muſica, pag. 97.

* In muſico modulamine non unformiter ut alibi, ſed multipliciter multiſque; modis & modulis cantilenas emittunt, adeò ut in turba canentium, ſicut huic genti mos eſt, quot videas capita, tot audias carmina diſcriminàque vocum, varia in unam denique ſub B. Mollis dulcedine blanda conſonantiam & organicam convenientia melodiam. In borealibus quoque majoris Britanniæ partibus trans Humbrum, Eboracique finibus Anglorum populi qui partes illas inhabitant ſimili canendo ſymphoniaca utuntur harmonia: binis tamen ſolummodo tonorum differentiis & vocum modulando varietatibus, una inferius ſub murmurante altera verò ſupernè demulcente pariter & delectante. Nec arte tantùm ſed uſu longæus

As this method of ſinging ſeems by the account above given of it to have been ſubſervient to the laws of harmony, an enquiry into its origin may lead to a diſcovery when and where muſic in conſonance was firſt practiſed. The author above cited would inſinuate that the inhabitants of this country might receive it from the Dacians, or Norwegians; but he has not ſhewn, nor is there the leaſt reaſon to think that any ſuch practice prevailed among either of thoſe people; and till evidence to that purpoſe ſhall be produced, we may ſurely ſuſpend our belief, and refer the honour of the invention to thoſe who are admitted to have been in poſſeſſion of the practice. It will be remembered, that in the foregoing pages it has been related that the monaſtery of Wiremouth, in the kingdom of Northumbria, was famous for the reſidence of John the arch-chanter, and other the moſt ſkilful muſicians in Britain. It is therefore not improbable that ſymphoniac muſic might have its riſe there, and from thence it might have been diſſeminated among the common people inhabiting that part of the kingdom; nay, it is next to impoſſible that a practice ſo very delightful, and to a certain degree ſo eaſily attainable, could be confined within the walls of a cloiſter.

It is true, that the reaſons above adduced will warrant nothing more than a bare conjecture that muſic in conſonance had its riſe in this iſland; but it may be worth conſidering whether any better evidence than that it was known and practiſed in England ſo early as the eighth century, can be produced to the contrary.

But without purſuing an enquiry touching the particular country where ſymphoniac muſic had its riſe, enough has been ſaid to aſcertain, within a few years, the time of its origin; it remains to account for the error of thoſe writers who aſcribe the invention of it to Guido.

longævo & quaſi in naturam mora diutina jam converſo, hæc vel illa ſibi gens hanc ſpecialitatem comparavit. Qui adeò apud utramque invaluit & altas jam radices poſuit, ut nihil hîc ſimpliciter, ubi multipliciter ut apud priores, vel ſaltem dupliciter ut apud ſequentes, mellitè proferri conſueverit. Pueris etiam (quòd magis admirandum) & ferè infantibus, (cum primum à fletibus in cantus erumpunt) eandem modulationem obſeruantibus. Angli verò quoniam non generaliter omnes ſed boreales ſolùm hujuſmodi vocum utuntur modulationibus, credo quòd a Dacis & Norwagienſibus qui partes illas inſulæ frequentiùs occupare ac diutiùs obtinere ſolebant, ſicut loquendi affinitatem, ſic canendi proprietatem contraxerunt. Cambriæ Deſcriptio, cap. xiii.

Beſides the application of the ſyllables UT, RE, MI, FA, SOL, LA, to the firſt ſix notes of the ſeptenary, it is univerſally allowed that he improved, if not invented the ſtave; and that if he was not the firſt who made uſe of points placed upon one or other of the lines to ſignify certain notes, he was the firſt that placed points in the ſpaces between the lines, and by the invention of the keys or cliffs, compreſſed, as it were, the whole ſyſtem of the double diapaſon into the narrow limits of a few lines.

After he had thus adjuſted the ſtave, and had either invented or adopted, it matters not which, the method of notation by points inſtead of letters, it was but a conſequence that the notation of muſic of more points than one ſhould be by points placed one under another: and as in his time, the reſpective notes contained in the ſeveral parts, being regulated by one common meaſure, viz. that of the feet or ſyllables to which they were to be ſung, they ſtood in need of no other kind of diſcrimination than what aroſe from their different ſituations on the ſame ſtave, or on different ſtaves, and, by conſequence, the points muſt have been placed in a vertical ſituation, and in oppoſition to each other; and this method of notation ſuggeſted for muſic of more than one part the name of Counterpoint, a term in the opinion of ſome ſavouring of the barbarity of the age in which it was invented, but which is too expreſſive of the idea intended to be conveyed by it to be quarrelled with.

What has been ſaid above reſpecting the improvements of Guido, will furniſh a rule for judging of the credibility of the aſſertion which it is here propoſed to refute, namely, that he was the inventor of polyphonous or ſymphoniac muſic, and lead to the ſource of that, which by this time, cannot but be thought an error. The writers who maintain this poſition, and they are not a few, have miſtaken the ſign for the thing ſignified, that is to ſay, Counterpoint, for Muſic in Conſonance, the thing characteriſed by counterpoint. The fact in ſhort is, that muſic in conſonance was in uſe before Guido's time; he invented a method of notation, calculated to define it, called Counterpoint: this is the whole relating to the invention now under conſideration that can be aſcribed to him; and it muſt have been the effect of ſtrange inattention that a different opinion has prevailed ſo long in the world.

Towards the end of the eighth century flouriſhed BEDE, well known to the world by the epithet of VENERABLE. He was born about

about the year 672, and was educated in the monaſtery ſituate at Weremouth, near the mouth of the river Tyne, in the biſhopric of Durham. He ſtudied with incredible diligence, and, in the opinion of the famous Alcuin, was, for learning, humility, and piety, a pattern for all other monks. He wrote an Eccleſiaſtical Hiſtory of Britain, at the end whereof are ſome memoirs of his own life, from which it appears that he was very aſſiduous in acquiring a knowledge of muſic, and punctual in the performance of choral duty in the church of his monaſtery. He had the good fortune to be very intimately acquainted with ſome of the ſingers whom pope Agatho had ſent into Britain to teach the method of ſinging, as it was practiſed at Rome; and was, in a word, one of the greateſt men of his time. He died in the year 735. His works have been many times printed, and in the latter editions make eight volumes in folio; the laſt is that of Cologne, in 1688. The firſt volume contains a great number of ſmall tracts on arithmetic, grammar, rhetoric, aſtronomy, chronology, muſic, the means of meaſuring time, and other ſubjects. On that of muſic, in particular, there is a tract intitled De Muſica Theorica; and another, De Muſica Quadrata, Menſurata, ſeu Practica*. It is ſaid, that he had no fewer than ſix hundred pupils; and that Alcuin, the preceptor to Charlemagne, was one of them. There is a well written life of him in the Biographia Britannica, and an accurate catalogue of his works in the Bibliotheca Britannico-Hibernica of biſhop Tanner.

Notgerus, or Notker, ſurnamed Le Begue, a monk of St. Gal, flouriſhed about the year 845, under the emperor Lotharius, ſon of Lewis the Pious. Among other things, he is famed for his book De Muſica et Symphonia. He is ſuppoſed to have been the inventor of the Sequentiæ, which are thoſe parts of the office in which the people anſwer to the prieſt, and which pope Nicolas I. ordained to be ſung at maſs. He died in 912. Innocent III. had taken order for his canonization, but his deſign was never carried into execution. There was another of the name, biſhop of Liege: Trithemius has confounded them together.

Rabanus Maurus, a Moor, as his ſurname imports, is reckoned in the number of thoſe who have written on muſic. He was born at

* Vide Tan. Biblioth. pag. 89, in not. col. ii.

Mentz, in 788, and bred up in the monaſtery of Fulda. He ſtudied at Tours, under Alcuin, and returning to his monaſtery, was choſen abbot thereof, in 822. Having enjoyed that dignity twenty years, he laid it down to pleaſe the monks, who ſaid he applied himſelf too much to ſtudy, and too little to the affairs of the monaſtery. He retired to Mount St. Pierre; and was at laſt choſen archbiſhop of Mentz, in 847. In a treatiſe of the univerſe, conſiſting of twenty-two books, which he wrote and ſent to Lewis le Debonnaire *, he has compriſed an infinite number of common places, amongſt which, it is ſuppoſed, are many relating to muſic, ſince Broſſard has ranked him in his ſecond claſs of writers on that ſubject. In a commentary of his upon the liturgy, he expatiates on the ſacrifice, as it is called of the maſs †, which latter word he ſuppoſes to be derived from the 'Ite miſſa eſt,' Go, ye are diſmiſſed, the form uſed for the diſmiſſion of the catechumens, and to ſignify that the ſervice was ended.

WALAFRIDUS STRABO, ſo ſurnamed becauſe he ſquinted, was firſt a monk of Fulda, and afterwards abbot of Richenou, in the dioceſe of Conſtance. He is reckoned among the muſical writers, and had been a diſciple of Rabanus Maurus. He flouriſhed about the year 842, and wrote De Officiis Divinis, the twenty-fifth chapter of which tract is intitled De Hymnis & Cantilenis eorumque incrementis, &c. ‡ The Benedictines, compilers of

* Du Pin. Nouv. Biblioth. des Auteurs Eccleſ. ſiec. ix.

† As the word Maſs will frequently occur in the courſe of this work, the following note of the tranſlator of Du Pin's Bibliotheque, vol. VI. pag. 3, may ſerve for an explanation of that rite.

'The word Miſſa, or Maſs, is an old Latin word, and ſignifies generally the whole ſervice of the church, but more eſpecially the holy ſacrament of Chriſt's body and blood. It was called Miſſa, or Dimiſſio, becauſe no man was ſuffered to remain in the church that could not or would not receive the ſacrament; and therefore ſuch perſons as had a mind to ſee and hear, but not receive, were all, without exception, diſmiſſed by the deacon, after the ſermon was ended, with theſe words, "Ite, miſſa eſt; Go, ye are diſmiſſed:" and if any delayed, they were urged to depart by the deacons and exorciſts, ſaying aloud, "Si quis non communicet det locum; Whoever will not receive, let him go out." The Roman church puts a different ſenſe upon this word Maſs, underſtanding by it that ſolemn ſervice wherein they do pretend to offer unto God the body and blood of his Son, as a propitiatory ſacrifice for the ſins, both of the quick and dead. Iſidore here takes it in the firſt ſenſe, calling it Ordo Precum, i. e. the Form of Prayers. But Du Pin, by joining it with the word Canon, (a word of a much later uſe, and which ſignifies, in the Roman church, the rule or form of celebrating their maſs) ſeems to bring it over to the latter, but againſt the ſenſe of St. Iſidore of Seville.'

‡ Vide Du Pin. Biblioth. cent. ix. cap. xiii.

the

the Hiſtoire Litteraire de la France, have diſcovered that there was another of his name, dean of the abbey of St. Gal, in the preceding century, with whom he is often confounded. Hiſt. Lit. de la France, tom. IV. pag. 59, in not.

BRISTAN, or BRICSTAN, a native of England, a Benedictine monk, and precentor in the monaſtery of Croyland, is celebrated by Pits as an excellent mathematician, poet, and muſician *. Ingulphus, pag. 867, ſpeaks thus of him: 'Briſtanus, quondam cantor monaſterii, 'muſicus peritiſſimus et poeta facundiſſimus.' He lived about 870, at the time when, in one of the invaſions of the Danes, his monaſtery was burned, and the monks ſlain: he had, however, the good fortune to eſcape, and compoſed certain elegiac verſes, wherein he relates the cruelties exerciſed by the invaders, the ſufferings of his brethren, and the misfortunes attending this diſaſtrous event.

As it is propoſed in this work to give an account as well of practical as theoretical muſicians, there will need little apology for inſerting in this place a few particulars of our own king ALFRED, who is celebrated by Bale, and other writers, for his ſkill in muſic, and his performance on the harp: that he was very ſedulous in his endeavours to promote the ſtudy of muſic in his kingdom, we are told by Sir John Spelman, in his life of this great monarch, pag. 135; and particularly that he procured to be ſent from France one Grimbald †, a man very ſkilful in muſic, of a ſingular good life, great learning, and who beſides was an excellent churchman. Sir John Spelman adds, that the king firſt came to the knowledge of this perſon by his courteſy, he having made very much of him in his childhood, at Rheims, when he was in his paſſage towards Rome.

† Pits. De Reb. Angl. pag. 167. Tann. 124.

‡ Of this Grimbald very honourable mention is made in the Hiſtoire Litteraire de la France, tom. V. pag. 694. Alfred had written to Fulk, archbiſhop of Rheims, intreating him to ſend to England a perſon ſkilled in the liberal ſciences, particularly muſic. The archbiſhop wrote the king a long letter in anſwer, recommending Grimbald, a monk of St. Bertin, the perſon above mentioned. This was about the year 880; and had Grimbald been a much greater man than he was, the French would have been bound in gratitude to have ſpared him to us; for a few years before, they had from us Alcuin, the tutor of Charlemagne. It appears that Grimbald behaved very well whilſt he was here. In the chronicle of Nic. Harpsfield are the heads of a ſpeech of his, in a ſynod at London, before king Alfred and archbiſhop Æthelred, wherein he diſcourſed gravely and wiſely of the primitive dignity of human nature, and of its corruption by the fall of Adam. The whole is ſaid to be in the Annals of Wincheſter. Vide Spelm. Life of Alfred, pag. 135, in not.

And

Again, the ſame author relates, that among the reſt of his attendants, he is noted, Solomon like, to have provided himſelf of muſicians, not common, or ſuch as knew but the practic part; but men ſkilful in the art itſelf, whoſe ſkill and ſervice yet farther improved with his own inſtruction, and ſo ordered the manner of their ſervice as beſt befitted the royalty of a king. Spelm. Life of Alfred, pag. 199.

That he himſelf was alſo a conſiderable proficient on the harp, were other evidences wanting, the well-known ſtory related by Ingulphus, William of Malmeſbury, and ſucceeding hiſtorians, of his entering the Daniſh camp, diſguiſed like a harper or minſtrel, is a proof.

The ſubſtance of which relation is, that being deſirous to know the ſtrength and circumſtances of the Daniſh army, then in Somerſetſhire, he diſguiſed himſelf like a minſtrel, and taking with him a harp, and one only confidant, he went into the Daniſh camp, the privilege of his diſguiſe intitling him to free admittance every where, even into the king's tent; and there, for many days, he ſo employed himſelf as that, while he entertained his enemies with his mirth and muſic, he obtained the fulleſt ſatisfaction touching their ability to reſiſt the attac on them, which he had for ſome time been meditating. This was in the year 378 *.

Hucbald, Hugbaldus, or Hubaldus, for by all theſe names is he called, is ſpoken of as the moſt celebrated doctor in France at the cloſe of the ninth century. He was a Benedictine monk, of the abbey of St. Amand, in the dioceſe of Tournay, and flouriſhed about the year 880, under Charles the Bald. He is celebrated for his profound ſkill in the learning of thoſe days, and particularly for his excellence in poetry and muſic †. He is ſaid to have invented a diviſion of the monochord, by means whereof muſic might be learned without the help of a maſter; and to have invented certain ſigns, independent of lines and letters, to mark the ſounds in the octave. Martini, who ſometimes calls him Ubaldo, has given a ſpecimen of this his method

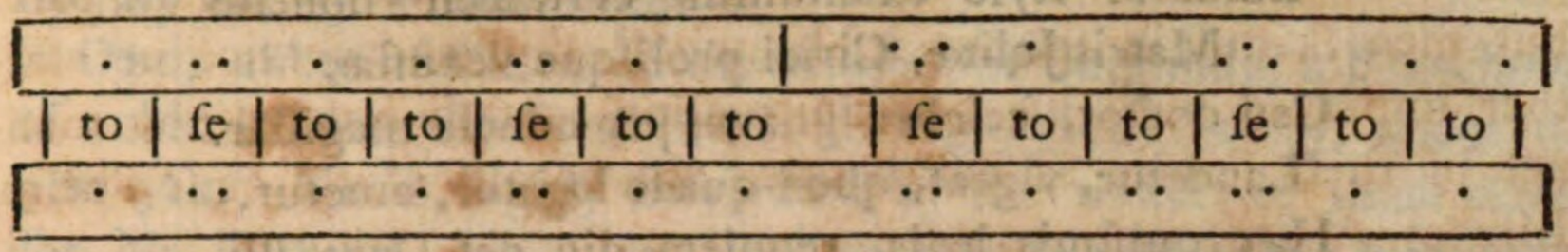
* Vide Spelman's Life of Alfred, pag. 63.

† Hiſt. Litteraire de la France, tom. VI. pag. 210.

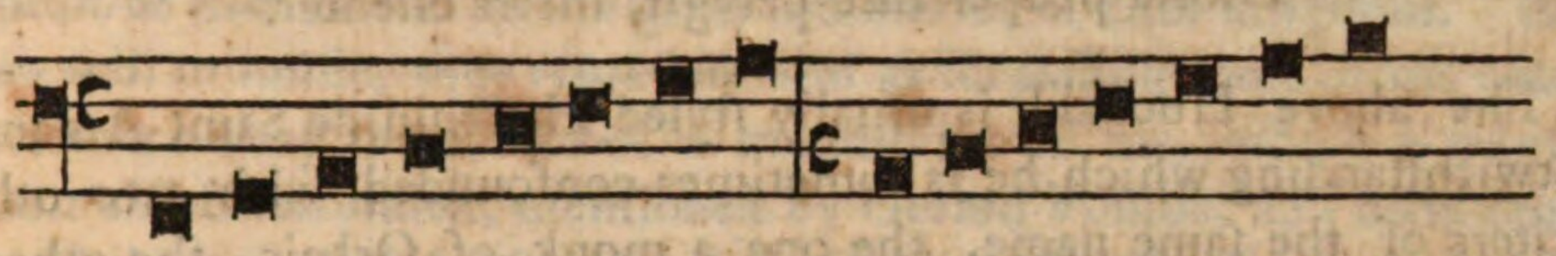
Sigebert, Trithemius, and others, mention a poem of Hugbald's compoſing, and of a very ſingular kind. It is an encomium on Baldneſs, in heroic verſe, inſcribed to the emperor Charles the Bald, in which every word begins with the initial letter of the emperor's name, as in the following line.

Carmina clariſona clavis cantate Camenæ.

of punctuation from a manuſcript of his, intitled De Harmonica Inſtitutione, in the following form:



Which he renders thus in modern characters:



The authors of the Hiſtoire Litteraire de la France alſo ſpeak in general terms of a method of muſical punctuation invented by him, doubtleſs the ſame with that above; and add, that he compoſed and noted offices in honour of many of the ſaints. He died at the age of ninety, in the year 930, and was buried in the church of St. Peter, in his own abbey. The merits of Hucbald, his learning and virtues, were celebrated by many of his ſurviving friends, in epitaphs, and other metrical compoſitions; the two which follow are extant in the work above cited, and are here inſerted, not ſo much on account of their elegance, as to ſhew the degree of eſtimation in which he ſtood with his contemporaries.

EPITAPH I.

Dormit in hac tumba ſimplex ſine felle Columba
Doctor, flos, & honos tam cleri quàm monachorum
Hucbaldus, famam cujus per climata mundi
Edita ſanctorum modulamina, geſtaque clamant.
Hic Cyrici membra pretioſa, reperta Nivernis.
Noſtris invexit oris, ſcripſitque triumphum.

EPITAPH II.

Præcluis orator ſudans opobalſama coſmo
Archas mellifluus rhetor ſuper æthera notus,
En Huncbalde pater ſalve per ſecla verenter
Tu lampas monachis, tu flos & doxa peritis:

* Storia della Muſica, pag. 183.

Te

Te plebs æternùm lugens ſibi deflet ademtum.
Vige juge, ſophiſta, vale, Theophile care.
Ediderat ſtylo examuſſim certamen honeſto
Matris Julitæ, Cirici proliſque venuſtæ,
Ceu doctor, celeber gnavus per cuncta magiſter.
Laudetur, vigeat, quod quæſo legatur, ametur.
Hæc quiſquis legis, requiem dic det Deus illi,
Palmam cum ſuperis geſtet ſuper aſtra choreis
Gloria pauper hæc peregit, metra clienter.

The above Hucbald is uſually ſtyled Hucbald de Saint Amand; notwithſtanding which he is ſometimes confounded with two other writers of the ſame name, the one a monk of Orbais, the other a clerk in the church of Liege, neither of whom ſeem to ſtand in any degree of competition with him *.

AURELIANUS, a clerk in the church of Rheims, lived in the year 890, under the emperor Arnulphus, and on to the reign of Lewis IV. He was in great eſtimation for his learning, and author of a treatiſe on the tones, intitled, Tonarius regularis, which he compoſed for the uſe of his church, and inſcribed to Bernard, the precentor of the choir. He is placed by Trithemius among the eccleſiaſtical writers †.

CHAP. VI.

WE are now arrived at a period, namely the commencement of the tenth century, when learning began to flouriſh throughout Europe. In France, particularly, not only mathematics, but the arts of painting, ſculpture, and architecture, were cultivated with great aſſiduity. The abbies of Corbie, of Rheims, and Cluni, were the great ſeminaries of that country, and produced a ſucceſſion of men eminent in all faculties: the former of theſe was ſo famous for muſical inſtitution, that young monks from England were uſually ſent thither to be taught the true method of ſinging in divine ſervice. Letald, Remi de Auxerre, Notker le Begue, Wigeric biſhop of Metz,

* Storia della Muſica, pag. 214.
† Voſſius De Scientiis Mathem. cap. ix. § 6.

and

and Hucbald de St. Amand, before-mentioned, were all ſkilled in muſic, and are ſome of the moſt celebrated names that occur in the literary hiſtory of thoſe times *.

Odo, abbot of Cluni, in the province of Burgundy, a Frenchman of noble deſcent, alſo flouriſhed in this age, that is to ſay, about the year 920. He is highly celebrated by the writers of thoſe times, for his learning, his piety, and his zeal to reform the manners of the clergy. The authors of the Hiſtoire Litteraire de la France ſpeak of him as one of the great luminaries of that kingdom. As to his ſkill in muſic, they repreſent him as ſurpaſſing moſt of his cotemporaries: they ſpeak alſo of a manuſcript of his, which is no other than the Enchiridion, mentioned by Gerard Voſſius, and commended by Guido himſelf, beginning 'Quid eſt muſica?' as a great curioſity, and being extant only in the Vatican library, and in that of the queen of Sweden; nevertheleſs, it is to be found in the library of Baliol college, and makes part of a volume, that contains the Micrologus, and other tracts of Guido, with ſome others on the ſubject of muſic, of great value; and Martini refers to another, in the conventual library at Ceſana, near Ravenna, in Italy.

The Enchiridion of Odo is in the form of a dialogue between a teacher and his diſciple: it begins with directions for the making and dividing of the monochord, and contains a general definition of the conſonances, the method of notation by the Roman letters, as inſtituted by Gregory, a formula of the tones, and concludes with general directions for antiphonal ſinging.

It is to be remarked, that all the tracts written about this time, which profeſs to teach the knowledge of muſic, and there are innumerable of them extant, begin, as this does, with directions for making and dividing the monochord: the reaſon of this is, that the method of aſcertaining the places of the ſemitones in the diapaſon, by the ſyllables, was not then diſcovered; and hardly any inſtrument then in uſe, excepting the organ, would anſwer the end of impreſſing upon the memory of a child, the difference between the greater and leſſer intervals; the teachers of muſic therefore invariably directed their pupils to find out the intervals themſelves, and lay

* Hiſt. Litteraire de la France, tom. VI. pag. 71.

the foundation of their ſtudies in the knowledge of the monochord.

SILVESTER, the ſecond pope of that name, is juſtly celebrated as one of the great ornaments of the tenth century. He was a monk of Aurillac, in the province of Auvergne, a monaſtery which had been founded at the latter end of the preceding age. His purſuits were ſo various, and his excellence in all branches of learning ſo great, that it is difficult to ſay in what claſs of learned men he merits moſt to be placed; or whether we ſhould conſider him as a divine, a mathematician, or a philoſopher at large. It is certain that he wrote upon geometry, particularly on the quadrature of the circle, on aſtronomy, logic, and rhetoric; that he was deeply ſkilled in the ſcience of muſic, as a proof whereof it is ſaid that he made ſome conſiderable improvements of the organ, on which he was an excellent proficient: William of Malmeſbury ſpeaks, with admiration, of an improvement made by him in the hydraulic organ *. He was born of obſcure parents, in the neighbourhood of Aurillac: his name of baptiſm was Gerbert, or Girbert: his great merit, and a diſpoſition to communicate to the world the diſcoveries he made in the courſe of his ſtudies, facilitated his promotion to the higheſt dignities of the church; for he was ſucceſſively archbiſhop of Rheims and Ravenna, and at laſt pope. While he was archbiſhop of Rheims, he had the misfortune to ſee that city ſuſtain a cloſe ſiege, which obliged him to ſeek refuge in the court of the emperor Otho III. who had been his diſciple. During his reſidence there, he invented an inſtrument for the meaſuring of time by the motion of the polar ſtar, which ſome writers have confounded with the aſtrolabe. By the intereſt of his patron Otho, in the year 998, he was promoted to the archbiſhopric of Ravenna, and the following year to the papacy on the death of Gregory V. which he held but four years, for he died in 1003.

Moſheim has beſtowed an eulogium on Gerbert as characteriſtic of the age in which he lived, as of the perſon he means to celebrate. He relates that he derived his learning in a great meaſure from the

* Said to have been played on by warm water. See the Hiſtory of the Manual Arts, by Dr. Thomas Powell, octavo, 1661, abridged in Oldys's Britiſh Librarian, N° I. pag. 51.

Arabians, among whom at that time there were many very conſiderable men; though it is remarkable that we meet with the name of but one writer on muſic of that country, viz. Alfarabius, who is barely mentioned in a note in the life of Hai Ebn Yokdhan, an ingenious fiction tranſlated from the original Arabic by Simon Ockley, 8vo. 1708. A treatiſe of his on muſic is referred to in the Margarita Philoſophica of Georgius Reiſchius, printed at Baſil in 1517. Moſheim ſpeaks thus of the ſtate of learning in Gerbert's time.

'It was not however to the fecundity of his genius alone that Gerbert was indebted for the knowledge with which he now began to enlighten the European provinces; he had derived a part of his erudition, particularly in phyſic, mathematics, and philoſophy, from the writings and inſtructions of the Arabians, who were ſettled in Spain. Thither he had repaired in purſuit of knowledge, and had ſpent ſome time in the ſeminaries of learning at Cordoua and Seville, with a view to hear the Arabian doctors; and it was, perhaps, by his example, that the Europeans were directed and engaged to have recourſe to this ſource of inſtruction in after-times. For it is undeniably certain, that, from the time of Gerbert, ſuch of the Europeans as were ambitious of making any conſiderable progreſs in phyſic, arithmetic, geometry, or philoſophy, entertained the moſt eager and impatient deſire of receiving inſtruction either from the academical leſſons, or from the writings of the Arabian philoſophers, who had founded ſchools in ſeveral parts of Spain and Italy. Hence it was that the moſt celebrated productions of theſe doctors were tranſlated into Latin, their tenets and ſyſtems adopted with zeal in the European ſchools, and that numbers went over to Spain and Italy to receive inſtruction from the mouths of theſe famous teachers, which were ſuppoſed to utter nothing but the deepeſt myſteries of wiſdom and knowledge. However exceſſive this veneration for the Arabian doctors may have been, it muſt be owned nevertheleſs that all the knowledge, whether of phyſic, aſtronomy, philoſophy, or mathematics, which flouriſhed in Europe from the tenth century, was originally derived from them, and that the Spaniſh Saracens in a more particular manner may be looked upon as the fathers of European philoſophy.' Moſh. Eccleſ. Hiſt. vol. II. pag. 199.

The diligence with which Gerbert purſued his ſtudies, and his proficiency in ſo many various branches of learning, raiſed in the vulgar a ſuſpicion of his being addicted to magic, which Platina has without heſitation adopted; for he ſays he obtained the papacy by ill arts, and that he left his monaſtery to follow the devil. He however allows him the merit of a ſincere repentance, but mentions ſome prodigies at his death, which few can believe on the authority of ſuch a writer. Naudeus has written a juſtification of a great number of learned men who have undergone the ſame cenſure, and has included Silveſter among them; but long before his time a certain poet had done him that good office in the following epigram.

Ne mirare Magum fatui quod inertia vulgi
Me (veri minime gnara) fuiſſe putat.
Archimedis ſtudium quod eram ſophiæque ſequutus
Tum, cum magna fuit gloria ſcire nihil.
Credebant Magicum eſſe rudes, ſed buſta loquuntur
Quam pius, integer & religioſus erant.

The following epitaph beſpeaks his character, and is an epitome of his hiſtory.

Iſte locus mundi Silveſtri membra ſepulti
Venturo Domino conferet ad ſonitum.
Quem dederat mundo celebrem doctiſſima virgo.
Atque caput mundi culmina Romulea.
Primum Gerbertus meruit Francigena ſede
Remenſis populi metropolim patriæ.
Inde Ravennatis meruit conſcendere ſummum
Eccleſiæ regimen nobile, ſicque potens
Poſt annum Romam mutato nomine ſumſit,
Ut toto paſtor fieret orbe novus.
Cui nimium placuit ſociali mente fidelis.
Obtulit hoc Cæſar tertius Otho ſibi.
Tempus uterque comit clara virtute ſophiæ;
Gaudet, & omne ſeclum frangitur omne reum
Clavigeri inſtar erat cælorum ſede potitus,
Terna ſuffectus cui vice paſtor erat.

Iſte

Iſte vicem Petri poſtquam ſuſcepit, abegit
Luſtrali ſpatio ſæcula morte ſui.
Obriguit mundus diſcuſſa pace triumphus
Eccleſiæ mutans, dedidicit requiem.
Sergius hunc loculum miti pietate ſacerdos,
Succeſſorque ſuus comſit amore ſui.
Quiſquis ad hunc tumulum devexa lumina vertis,
Omnipotens Domine, dic, miſere ſui.

BERNO, abbot of Richenou, in the dioceſe of Conſtance, who flouriſhed about the year 1008, is celebrated as a poet, rhetor, muſician, philoſopher and divine. He was the author of ſeveral treatiſes on muſic, particularly of one De Inſtrumentis Muſicalibus, beginning with the words 'Muſicam non eſſe contem!' which he dedicated to Aribon, archbiſhop of Mentz. He alſo wrote De Menſura Monochordi: but the moſt celebrated of his works is a treatiſe De Muſica ſeu Tonis, which he wrote and dedicated to Pelegrinus, archbiſhop of Cologne, beginning 'Vero mundi iſti advenæ et Peregrino': this latter tract is part of the Baliol manuſcript, and follows the Enchiridion of Odo, above referred to: it contains a ſummary of the doctrines delivered by Boetius, an explanation of the eccleſiaſtical tones, intermixed with frequent exhortations to piety, and the application of muſic to religious purpoſes. He was highly favoured by the emperor Henry II. for his great learning and piety, and ſucceeded ſo well in his endeavours to promote learning, that his abbey of Richenou was as famous in his time as thoſe of St. Gal and Cluni, then the moſt celebrated in France. He died in 1048, and was interred in the church of his monaſtery, which but a ſhort time before he had dedicated to St. Mark.

From the account herein before given of the riſe and progreſs of choral ſervice, and of the inſtitution of the eccleſiaſtical tones, modes, tropes, or whatever elſe they may be termed, it is clear that before the eleventh century they were in number eight, beſides which, the actual exiſtence at this day of manuſcripts, ſuch as thoſe of Aurelianus, Odo of Cluni, and this of Berno above-mentioned, in which not only eight tones are ſpoken of, but a formula of each is given in words at length, are indiſputable evidence of the fact. A learned gentleman, Dr. King, the author of a book lately publiſhed, intitled the Rites and Ceremonies of the Greek Church in Ruſſia, has intimated

mated, pag. 43, that the addition of the four plagal tones, as they are called, to the four authentic of St. Ambroſe, is by ſome aſcribed to Guido Aretinus, who, by the way, in his Micrologus lays not the leaſt claim to this improvement, but ſpeaks of the eight eccleſiaſtical tones as an ancient eſtabliſhment. We are therefore neceſſitated to conclude that the contrary opinion is without foundation, and the rather, as no writer of authority among the many that have been conſulted in the courſe of this work, has intimated the leaſt doubt but that the Cantus Gregorianus conſiſted of eight tones.

Through all the variations that attended muſic, the ancient ſyſtem of a biſdiapaſon, conſtituted of tetrachords, retained its authority; we do not find that even in the time of Boetius the ſyſtem itſelf had received any alteration; the Latins it is true had rejected the ancient Greek characters, and introduced the Roman capital letters in their ſtead; and pope Gregory reduced thoſe letters to the firſt ſeven of the Roman alphabet, which, by repeating them in each ſeptenary, he made to ſerve the purpoſe of a great number, calling the firſt ſeries graves, the ſecond acutes, and the third, diſtinguiſhed by double ſmall letters, ſuper-acutes; but the tetrachord ſyſtem, ſaid to be immutable, as alſo the Greek names anciently appropriated to the ſeveral chords, continued in uſe till the cloſe of the tenth century, ſoon after which ſuch a reformation of the ancient ſcale was made, as was thought worthy of commemoration, not only by chronologers, but by the graveſt hiſtorians. The perſon to whoſe ingenuity and induſtry we owe this ineſtimable improvement was an eccleſiaſtic, GUIDO ARETINUS, a Benedictine monk. The relation given by Cardinal Baronius of this event is to the following effect; viz. That in the pontificate of Benedict VIII. Guido Aretinus, a monk, and an excellent muſician, to the admiration of all, invented a method of teaching muſic, ſo that a boy in a few months* might learn what no man, though of great ingenuity, could before that attain in ſeveral years.—That the fame of this invention procured him the favour of the pope, who invited him to Rome, as did afterwards John XX. his ſucceſſor.—That in the thirty-fourth year of his age he compoſed a treatiſe, which he called Micrologus, and dedicated to Theodald, biſhop of Arezzo. Annal. Eccl. tom. XI. pag. 73, et ſeq.

* Guido in the prologue to the Micrologus ſays, in the ſpace of one month, 'unius menſis ſpatium.'

To

To this account Baronius has ſubjoined the epiſtle from Guido to a friend of his Michael of Pompoſa, beginning, 'Clariſſimo atque dul-'ciſſimo fratri Michaëli,' containing the hiſtory of his invention, and of his invitation to Rome and reception by the pope; the particulars whereof are referred to an extract from the epiſtle itſelf, which is given in a ſubſequent page of this work *. General accounts of the reformation of the ſcale made by Guido are to be met with in almoſt every treatiſe on the ſubject compoſed ſince his time; yet among theſe ſome improvements are attributed to him, as namely, the invention of the ſtave, and of the figure of a hand, to explain his method of notation, to the merit whereof, if we are to judge from his own writings, he does not appear to have made the leaſt claim.

It has been related that the method of notation among the Greeks was by the letters of their alphabet, as alſo that the Latins in their ſtead made uſe of the Roman capital letters, A, B, C, D, E, F, G, and ſo on to P, as is mentioned by Boetius in his fourth book; and that afterwards Gregory rejected all but the firſt ſeven, which he made to ſerve for the whole ſcale, diſtinguiſhing the grave ſeries by the capitals and the acute by the ſmall letters. Their manner of ſinging was from A to B, a tone; from B to C, a ſemitone; from C to D, a tone; from D to E, a tone; from E to F, a ſemitone; from F to G, a tone; ſo that, to ſpeak of the diapaſon only, the ſeven capital letters ſerved to expreſs, aſcending and deſcending, either gradually or by leaps, the ſeven notes *; but ſo difficult was it ac-

* By the epiſtle above referred to, it appears, that Baronius has been guilty of an error in ſaying that Guido was iuvited to Rome both by Benedict and John; for it was from John only that he received this mark of favour. Neither does he clearly diſtinguiſh between the Argumentum novi Cantus inveniendi and the Micrologus; the former contained his method of ſinging by the ſyllables, and procured him a general reputation, and the favour of Benedict: the latter, his reformation of the ſcale, and, as Guido himſelf expreſly ſays, was compoſed in the thirty-fourth year of his age, John XX. being then pope. Beſides this, he adds, that the Micrologus was written at the monaſtery of Pompoſa, whither he retired not, till after his interview with the pope.

* Zarlino has been guilty of a groſs miſtake in aſſerting, as he does in his Inſtitutions, part ii. chap. 30. that Guido firſt made uſe of the method of notation by the capital and ſmall Roman letters: the current opinion is, that Gregory introduced it; but ſuppoſing that matter doubtful, there is ſufficient evidence to prove that the practice in queſtion prevailed before Guido's time; for the Enchiridion of Odo, abbot of Cluni, contains directions for dividing the monochord, and marking the firſt ſeptenary with the capital, and the ſecond with the ſmall Roman letters; and Vincentio Galilei, in his Dialogo della Muſica, pag. 96, has given the following ſpecimen of Canto Fermo.

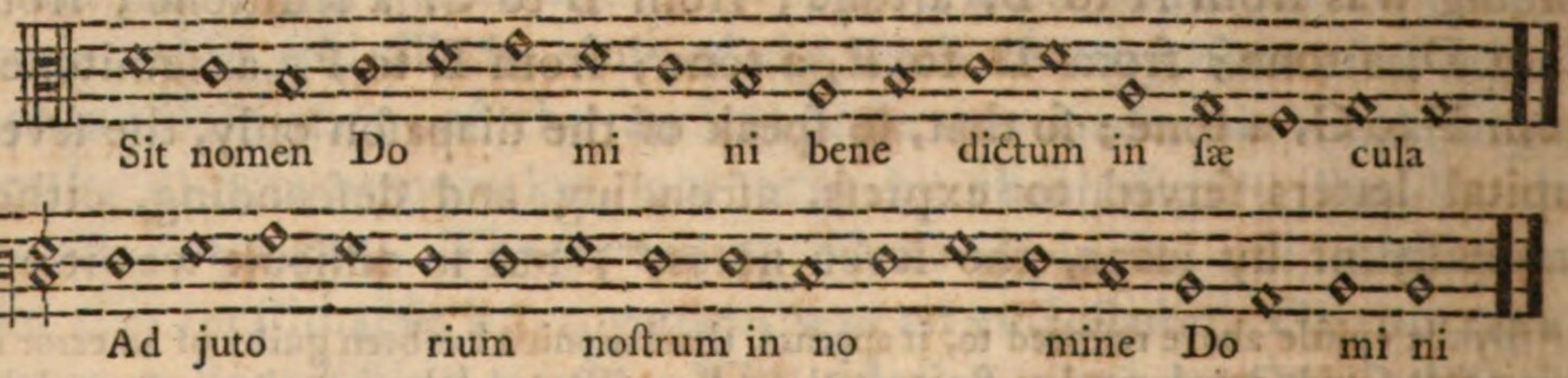
d	c	b	c	d	e	d	c	b	a	b	c	d	a	G	F	G	G
Sit	nomen	Do				mi		ni	bene		dictum	in	fæ			cula	
F	G	a	G	F	F	G	F	F	E	F	G	F	E	D	C	D	D
Adju	to		rium	noſtrum		in	no				mine	Do		mi		ni	

Sit

cording to this method to know and to hit preciſely the place of the two ſemitones, that before the pupils were able to acquire a knowledge of the Canto Fermo, ten years were uſually conſumed. Guido ſtudied with great diligence to remove this obſtruction; and the current account of this invention is, that being at veſpers, and ſinging the hymn to St. John, 'Ut queant laxis,' it by chance came into his head to apply, as being of eaſy pronunciation, certain ſyllables of that hymn to as many ſounds in a regular ſucceſſion, and thereby he removed thoſe difficulties that had a long time retarded the improvement of practical muſic.

UT queant laxis REſonare fibris
MIra geſtorum FAmuli tuorum
SOLve polluti LAbii reatum.
Sancte Joannes*.

This is the ſubſtance of what is related by Gaffurius, Glareanus, Vicentino, Galilei, Zarlino, Kircher, Merſennus, Bontempi, and other writers, touching the invention of the ſyllables; but the ſcale,



which he aſſerts was compoſed many years before Guido was born.

The peruſal of the Enchiridion of Odo has furniſhed the means of refuting a vulgar error, namely, that Guido, to perpetuate the memory of his reformation of the ſcale, prefixed to it the Greek Γ, the initial letter of his name; the contrary of this is manifeſt in the directions of Odo for dividing the monochord, in which he aſſumes that very character.

* The words of the above hymn were compoſed by Paulus Diaconus, Paul, a deacon of the church of Aquilea, about the year 770, and in the reign of Charlemagne, as Poſſevin relates. Dr. Wallis, from Alſtedius, in the room of the Adonic, Sancte Joannes, has inſerted O Pater Alme. Broſſard, and others after him ſay, that Angelo Berardi has very prettily compriſed the ſix ſyllables in this line.

UT RElevet MIſerum FAtum ſoLitoſque LAbores.

But Gerard Voſſius, De quatuor Artibus Popularibus, pag. 93, without taking notice of Berardi, ſays it is only part of the following verſe compoſed by ſome perſon who lived after Guido.

Cur adhibes triſti numeros cantumque labori?
UT RElevet MIſerum FAtum ſoLitoſque LAbores.

as

as it ſtood in the time of Guido, was not adapted for the reception of ſix ſyllables, and therefore the application which he made of them does neceſſarily imply ſome previous improvement of the ſcale, either actually made by him, or which he had at that time under conſideration. It is pretty certain that this improvement could be no other than the converting the ancient tetrachords into hexachords, which, to begin with the tetrachord Hypaton, he effected in this manner: that tetrachord was terminated in the grave by Hypate hypaton, or ♭; for though the Proſlambanomenos A, carried the ſyſtem a tone lower, it was always conſidered, as its name imports to be, acquiſitus, ſupernumerary, or redundant; the addition therefore of a tone below A immediately converted the tetrachord Hypaton into a hexachord, and drove the ſemitone into a ſituation that divided the hexachord into two equal parts. To this additional tone Guido, as ſome ſay, in honour of the Greeks, the fathers of muſic, or, as others ſuggeſt, to perpetuate the memory of his invention, and thereby acquire honour to himſelf, affixed the Greek gamma Γ, which fortunately for ſuch a ſuppoſition, was the initial letter of his name *.

By this conſtitution the poſition of the ſemitone was clearly pointed out to every theoriſt; but the thing in purſuit was a method of hitting it in practice, the want whereof rendered the ſinging extempore ſo very difficult, that few could attain to it without great labour; but the accidental hearing of the hymn above-mentioned ſuggeſted to Guido a thought that the ſix ſyllables therein contained might be ſo fitted to the ſix ſounds in his newly-formed hexachord, as to furniſh a rule for this purpoſe; accordingly he made the experiment, and applying the ſyllable UT to the firſt note of the hexa-

* Meibomius denies that Guido extended the ancient Greek ſyſtem either upwards or downwards, or that he even made any addition to the tetrachord Hypaton; for he aſſerts, with an unwarrantable degree of confidence, that though the Proſlambanomenos was generally underſtood as the loweſt ſound in the ancient ſyſtem, yet that the Greeks in truth recognized another, which was a tone below it, but that as it prolated a confuſed and undiſtinguiſhable ſound, it was neglected. He ſays that when Guido determined to reaſſume this tone, he was neceſſitated to mark it with the Grecian gamma, Γ; for that otherwiſe, as he had given the Latin G to its diapaſon Lychanos meſon, he muſt either have introduced a ſtrange character, or doubled the letter G, which latter method could not pleaſe him ſo well. Meibomius alſo ſays that the Greek ſyſtem proceeded even farther in the acutes than that of Guido; but the truth of this aſſertion will be beſt judged of by a compariſon of the ancient ſyſtem with that of Guido, as they ſtand oppoſed to each other in a ſubſequent page of this volume.

chord, and the reſt to the others in ſucceſſion, he gave to every note an articulate ſound.

The view of Guido in this contrivance was to impreſs upon the minds of learners an idea of the powers of the ſeveral ſounds, as they ſtood related to the firſt ſound in the hexachord; for he ſaw that from an habitual application of the ſyllables to their reſpective notes, it muſt follow that the former would become a common meaſure for the five intervals included within the limits of the hexachord, and that in a ſhort time the idea of aſſociation between the ſyllables and the notes would become ſo ſtrong as to make it almoſt impoſſible to miſapply them.

Finding that this invention was likely to ſucceed, he added two tones to the tetrachord Meſon, thereby making that alſo a hexachord, and to this alſo he applied the ſyllables.

Laſtly, he made a like addition of two tones to the tetrachord Synemmenon, and thereby formed a third tetrachord.

The ſeveral combinations and conjunctions of theſe tetrachords for the purpoſe of aſcertaining the intervals in any given ſyſtem, exceeding the limits of the hexachord, will be hereafter explained; the reſult of the invention was clearly this, that in a regular ſucceſſion of ſix ſounds in their natural order, beginning either from Γ, from C, or from F, taking in B b, the progreſſion with reſpect to the tones and ſemitone in each was preciſely the ſame: and ſuppoſing the learner to have acquired by conſtant practice a habit of expreſſing with his voice the interval G C, which is an exact fourth, by the ſyllables UT FA, the two ſounds proper to the interval G C would become a kind of tune, which he muſt neceſſarily apply to UT FA, wherever thoſe ſyllables ſhould occur; and in what other ſituation they occur the above conſtitution of the different hexachords ſhews; for as in the hexachord from G to E the ſyllables UT FA expreſs the fourth G C, ſo in that from C to A do they expreſs a fourth C F, and in the hexachord from F to D the fourth F B b.

The introduction of B b to avoid the Tritonus has been related at large; and here it may be proper to add that the exceeding diſcordancy or hardneſs of B ♮, when taken as a fourth, gave occaſion to the epithet ſoft, which for the ſake of diſtinction was given to B b; for this reaſon the hexachord from F is called the molle or ſoft hexachord, as that from G is called durum or hard; theſe appellatives

begot

begot another, namely, that of the natural hexachord, which is given to the hexachord from C. The method of ſinging each is termed a property in ſinging, and is thus deſcribed in the following diſtich.

C Naturum dat, f b molle nunc tibi ſignat,
g quoque b durum tu ſemper habes caniturum *.

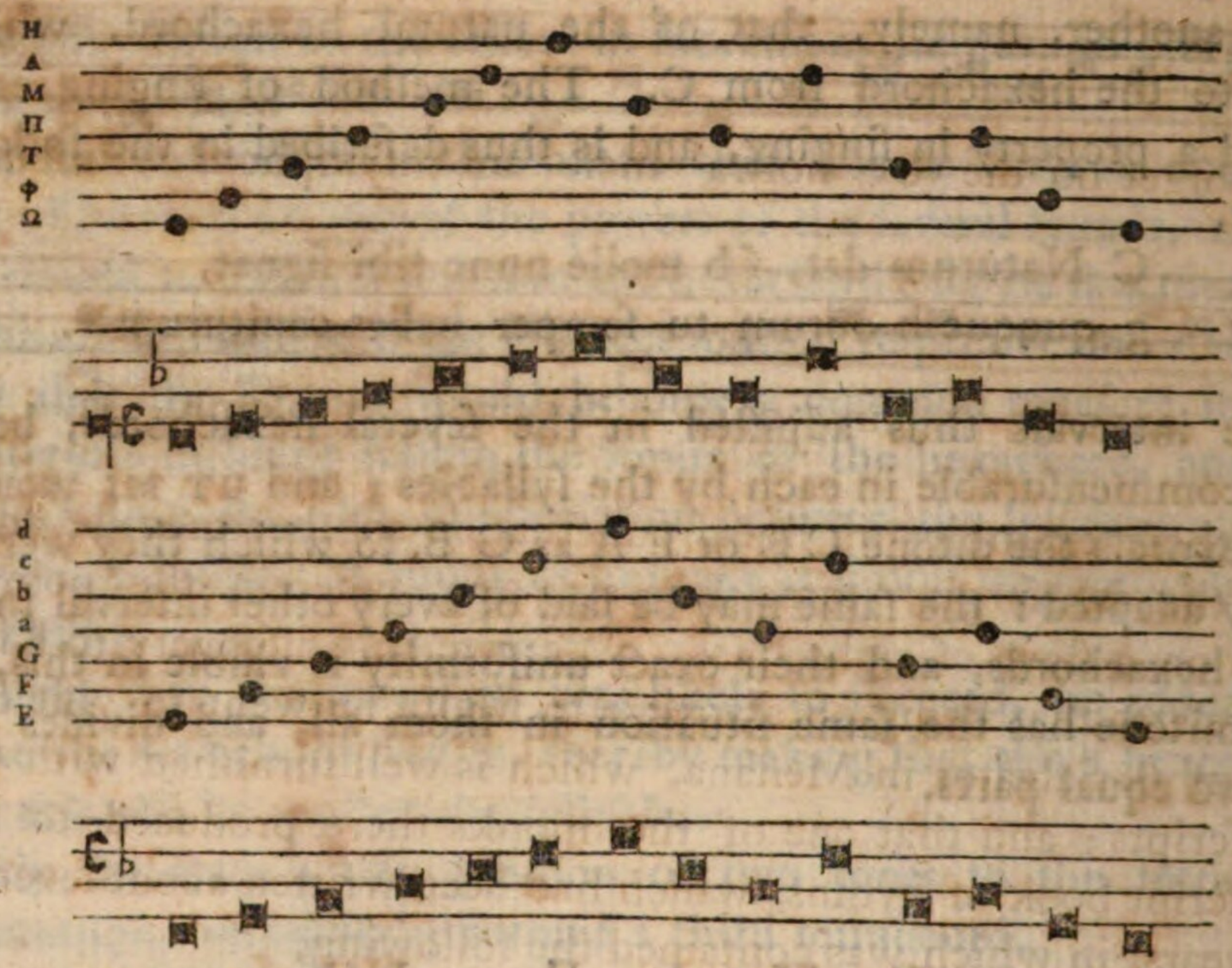
The intervals thus adjuſted in the ſeveral hexachords, became alike commenſurable in each by the ſyllables; and UT MI would as truly expreſs the ditone C E or F A as G B, to which they were originally adapted: the ſame may be ſaid of every other interval in each of the hexachords, and their exact uniformity is viſible in this, that the ſemitone has the ſame ſituation in them all, and divides them into two equal parts.

CHAP. VII.

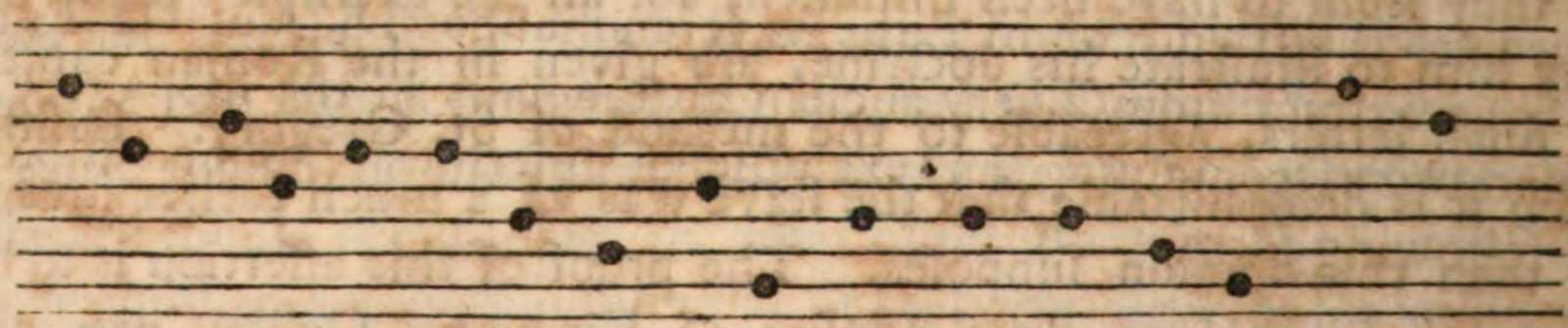
THE writers on muſic, as has been mentioned above, have alſo attributed to Guido another very conſiderable improvement of the muſical ſcale, which they ſuppoſe to be coeval with the formation of the hexachords, namely the Stave, conſiſting of parallel lines in a horizontal poſition, ſuch as is now uſed in the writing of muſic: in this they ſeem to have been miſtaken, for all the examples made uſe of by him to illuſtrate his doctrine, are given in the Roman capital and ſmall letters, agreeable to the method of St. Gregory. Beſides which it is demonſtrable that the ſtave was of a much earlier invention than this opinion ſuppoſes. The proof of this aſſertion is to be found in the Dialogo della Muſica of Vincentio Galilei, pag. 37, which contains a diagram of muſical punctuation on a ſtave conſiſting of no leſs than ſeven lines, which he ſays was in uſe long before the time of Guido †.

* Morley in the Annotations on book I. of his Introduction to Practicall Muſicke.

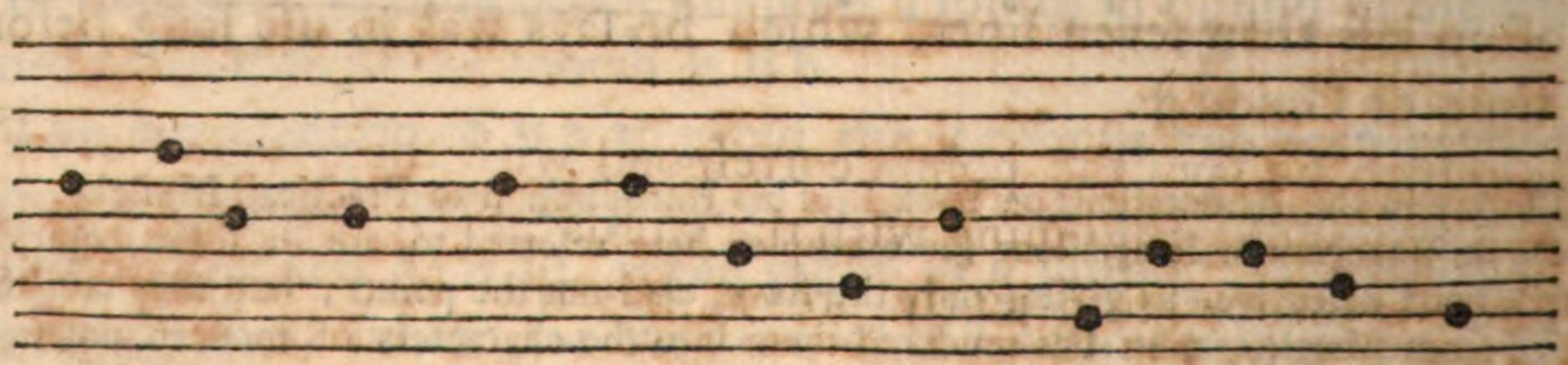
† By an unaccountable accident the examples here referred to, are in ſome copies of Galilei's book defective, as giving only the ſtave, and not the points; but they are here ſupplied from Martini, who has rendered them into the characters of modern notation. Vid. Stor. della Muſica, pag. 185.



And immediately after he exhibits an example of notation on a ſtave of ten lines, concerning which he thus expreſſes himſelf: ‘ Eccovi l' eſſempio d' una Cantilena tra le altre, che mi ſono capi-‘ tate in mano, la quale mi fu gia da un gentiluomo noſtro Fioren-‘ tino donata, ritrovata da lui in un antichiſſimo ſuo libro: ed è delle ‘ pui intere, è meglio conſervata d' altra che io abbia mai veduta.’

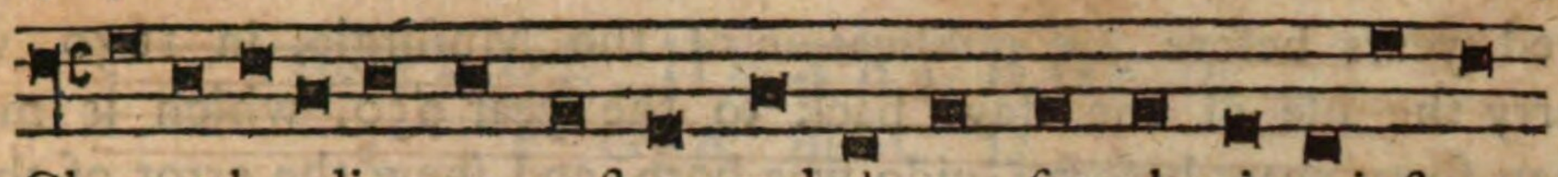


Clanget hodi e vox noſtra melodum ſymphoni a inſtant

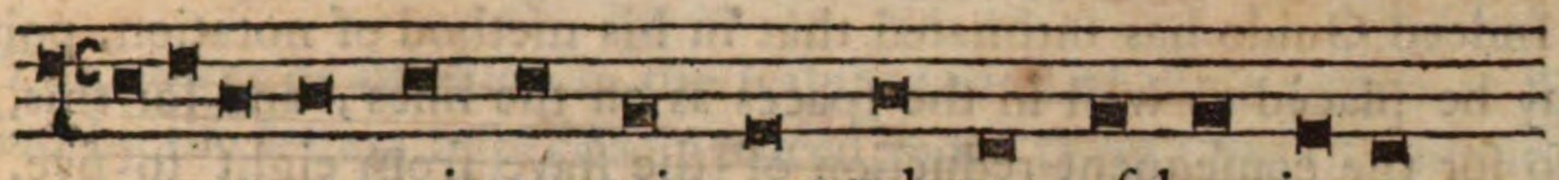


annua jam qui a præclara ſolemni - a, &c.

Clanget

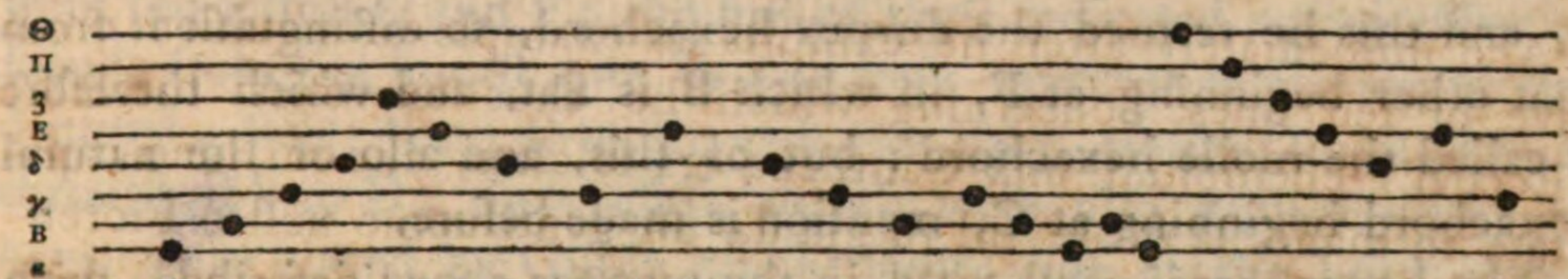


Clanget ho die vox noſtra melodum ſymphoni a inſtant



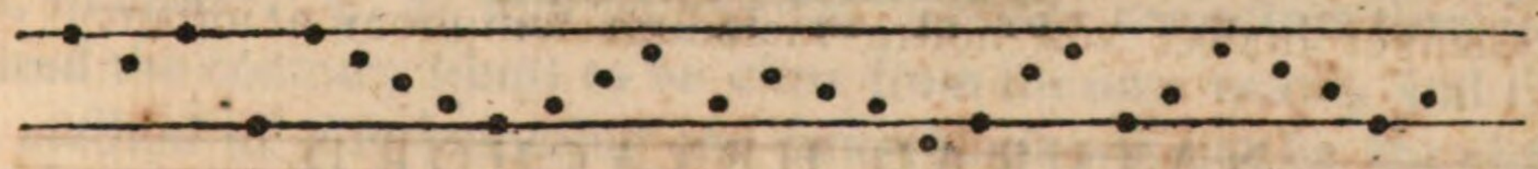
annua jam quia præclara ſolemni a.

To theſe examples of lineal punctuation another may be adduced from the Muſurgia, tome I. pag. 213, wherein the points are placed on a ſtave of eight lines. We owe this diſcovery to Kircher, who relates that being on a voyage to Malta he went to viſit the library of S. Salvator in Meſſana, which is well furniſhed with Greek manuſcripts; and that one of the monks there produced to him a manuſcript book of hymns, which had been written about ſeven hundred years, in which was contained the following.



Παρθέ σι η μέ γα χαρέ θωσ δό τε δωτός εαω ν μητες απομο σύνης

Kircher mentions that while he was writing the Muſurgia, he received from a friend of his, the reverend abbot Didacus De Franchis, an extract from a very ancient antiphonary in the monaſtery of Vallombroſa, containing an example of interlineary punctuation in the following form.



In which he ſays the points correſpond with the notes of a well-known antiphon, beginning with the words 'Salve Regina.'

Theſe evidences ſufficiently prove that the ſtave is more ancient than is generally ſuppoſed; for it is agreed that the Micrologus was written between the years 1020 and 1030; and a period of ſeven hun-

dred years before the publication of the Muſurgia, in 1650, will carry the uſe of the ſtave back to the year 950, which is more than forty years before Guido was born, and ſhew the error of thoſe who aſcribe the invention of the ſtave to him.

Indeed Guido has intimated that in his method of notation, points may be placed as well in the ſpaces as on the lines; and for this, as alſo for the conſequent reduction of the ſtave from eight to five, or rather, for the purpoſe of eccleſiaſtical notation, to four lines, poſterity are undoubtedly obliged to him.

It will be remembered that the ancient Greek ſcale was compoſed of tetrachords, and that it exhibits a ſucceſſion of chords from Proſlambanomenos, or A, to Nete hyperboleon, or aa. As to the Proſlambanomenos, it was termed Acquiſitus or Aſſumed, and therefore made no part of the tetrachord Hypaton. In proſecution of his ſcheme of converting the tetrachords into hexachords, with reſpect to the loweſt tetrachord in the ſcale Guido had nothing more to do than to add to it a ſingle chord, to which he affixed the Greek letter Γ, and this he termed the durum hexachord, to diſtinguiſh it from that other beginning at F, in which B is flat, and which therefore is called the molle hexachord: but of this, and alſo of the natural hexachord beginning at C, mention is made before.

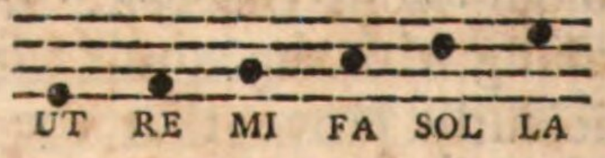
The hexachords, conſtituted in the manner above deſcribed, with the additional improvement of the ſtave, and before they were incorporated into the ſcale aſſumed the following form.

DURUM HEXACHORD.

G A B C D E

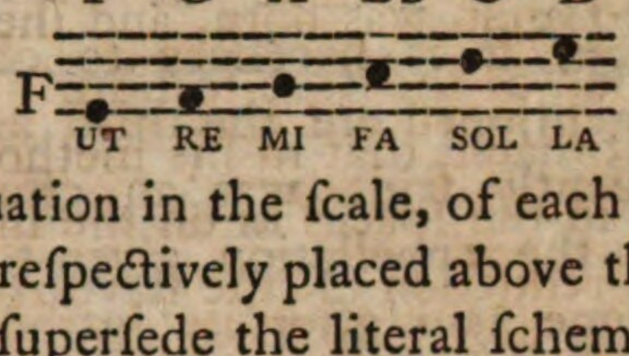
NATURAL HEXACHORD.

C D E F G A



MOLLE

MOLLE HEXACHORD.



The power or ſituation in the ſcale, of each of theſe points is ſignified by the letters reſpectively placed above them: but the intention of the ſtave was to ſuperſede the literal ſcheme of notation; it may therefore be ſaid, ſuppoſing the letters away, that each hexachord is but a repetition of the other two, and that the power of each point in all the three is ſimilar: but the caſe is far otherwiſe; for by a contrivance, which ſhews the admirable ſagacity of the inventor, the ſtave of four lines is rendered capable of expreſſing every one of the three different hexachords which the reformed muſical ſcale requires.

To manifeſt this diverſity Guido invented certain characters called Cliffs, in number three, whereof the firſt was Γ, the other two were the letters C and F: the firſt of theſe indicated a progreſſion of ſounds from the loweſt note in the ſcale upwards to E: the ſecond denoted a ſeries from C to A, and the third another ſeries from F through B b to D: theſe cliffs, which were alſo termed claves or keys, were placed by Guido on the lower line at the head of his ſtave. It is evident from hence, that by the application of the characters Γ, C, F, the power of the ſix points uſed to denote the hexachord, were, without the leaſt change of their ſituation in reſpect of the ſtave, made capable of a threefold variety, and conſequently required different denominations.

That Guido invented ſome method for aſcertaining the initial chords of each of the hexachords is certain, but that he made uſe of the letters, or cliffs, Γ, C, F, for that purpoſe, is rather conjecture than fact. Indeed the contrary ſeems to be clear from his own words, and that his method of diſcriminating the hexachords was not by the cliffs, but by making thoſe lines of the ſtave, which were their proper ſtations, of a different colour from the reſt. In the Micrologus we meet with theſe verſes.

Quaſdam lineas ſignamus variis coloribus
Ut quo loco ſit ſonus mox diſcernat oculus;

Ordine terciæ vocis ſplendens crocus radiat,
Sexta ejus, ſed affinis flavo rubet minio.

To underſtand which, it is neceſſary to obſerve that the third and ſixth notes here mentioned are the third and ſixth from A; for Γ, as has been frequently ſaid, was an aſſumed chord: Hypo-Proſlambanomenos is the appellation given to it even by modern muſicians, and for ſome ages after its introduction it was not in ſtrictneſs conſidered as part of the ſcale. That this is Guido's meaning is clear from the following paſſage in the Micrologus: 'We 'make uſe of two colours, viz. yellow and red, which furniſh a 'very uſeful rule for finding the tone and letter of the monochord to 'which every Neuma and note belongs. There are ſeven letters 'in the monochord, and whereſoever you ſee yellow it is the third, 'and wherever red it is the ſixth letter.' The third and ſixth letters here mentioned are moſt evidently the third and ſixth from A, the firſt of the ſeven letters on the monochord, that is to ſay C and F, which are the ſtations of two of the cliffs; and the above citations inconteſtibly prove that to indicate the key of C, Guido made uſe of a yellow, and for that of F, a red line *.

Hitherto we have conſidered the hexachords as the integral parts of Guido's ſyſtem, and as independent of each other; but their uſe, and indeed the ingenuity and excellence of his invention, can only be diſcerned in that methodical arrangement of them by means whereof they are made to coincide with the great or immutable ſyſtem: this, as has been ſhewn, was comprehended in the Hypaton, Meſon, Diezeugmenon, and Hyperboleon tetrachords; for the tetrachord to which they gave the name Synemmenon was merely auxiliary, as being ſuited to that kind of progreſſion only, which leads through what we now call b flat. The ſyſtem of Guido, ſuppoſing it to terminate as that of the ancients did at aa, and excluſive of the chord Γ added by him, to contain the biſdiapaſon, includes five hexachords differently conſtituted, the molle hexachord being auxiliary, and anſwering to the tetrachord ſynemmenon, which five hexachords reſpectively have their commencement from Γ, from C, from F, from G, and from C: but he found it capable of extenſion, and by adding four chords above aa, and a conſequent repetition of the molle

* See an example of this kind in a ſubſequent page of this book.

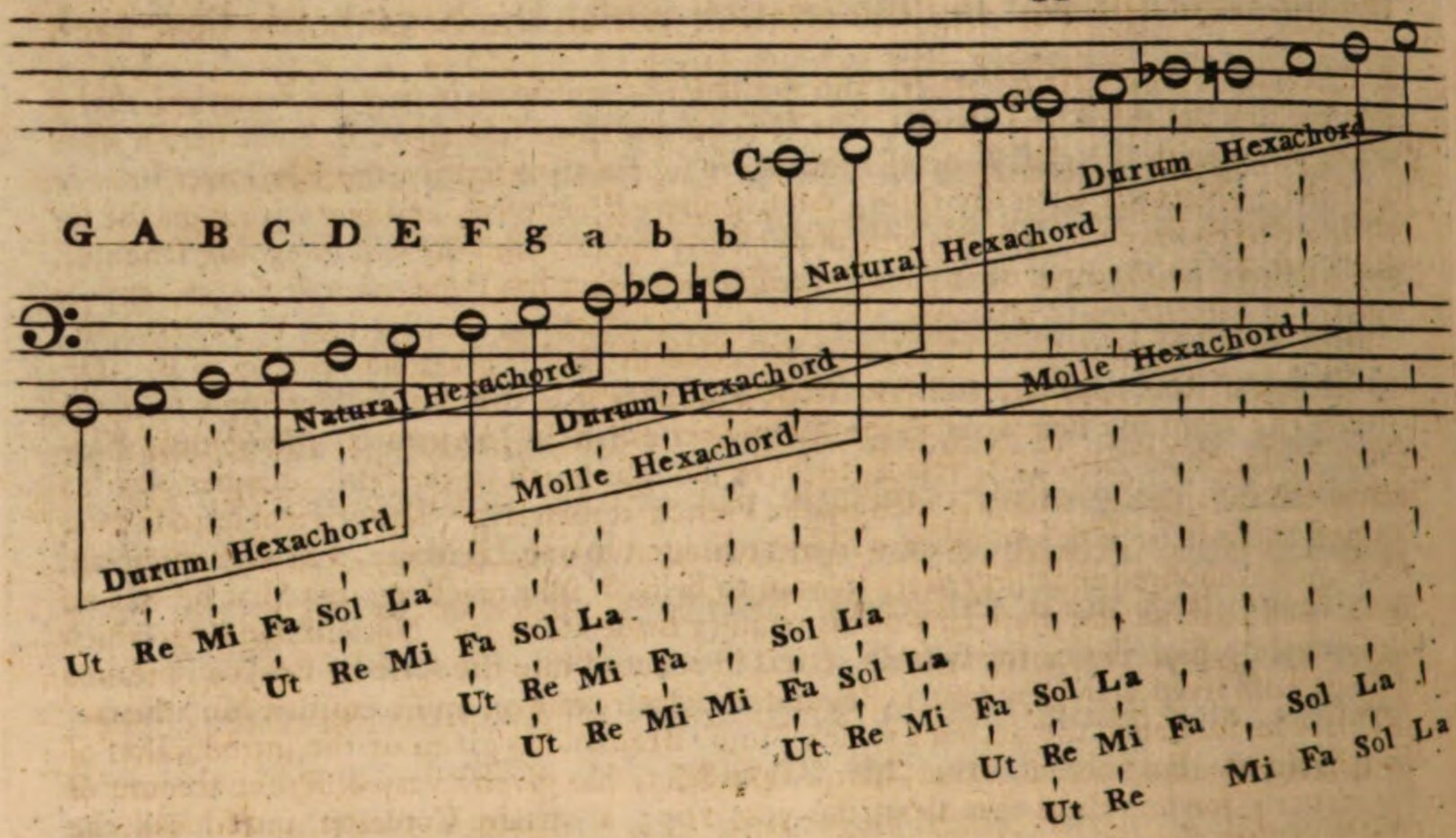
and

and durum hexachords from f and from g, he carried it up to ee, beyond which it was ſo ſeldom extended, as to give occaſion to a proverbial exclamation, by which even at this day we reprehend the uſe of hyperbolical modes of ſpeech, viz. ‘ that was a note above ‘ e la.’ By this addition of chords the hexachords were encreaſed to ſeven, that is to ſay, ſo many as are neceſſary for the conjugation of the ſyſtem included within Γ and ee.

But between the tetrachords of the ancients, and the hexachords of Guido, this difference is moſt apparent: the former were ſimply meaſures of the diateſſaron ſyſtem; they ſucceeded each other in an orderly progreſſion through the whole biſdiapaſon: the hexachord is alſo, at leaſt in the opinion of the moderns, the meaſure of a ſyſtem; but their collateral ſituation, and the being made as it were to grow the one out of the other, varies the nature of their progreſſion, and points out, in the compaſs of twenty-two notes, ſeven gradations or deductions, for ſo they are termed by the monkiſh writers, of ſix notes, each beginning at a different place in the diapaſon, and yet in all other reſpects preciſely the ſame. Add to this that the hexachords with the ſyllables thus adapted to them, become as it were, ſo many different conjugations, by which we are able to meaſure and try the muſical truth of the ſeveral intervals of which they are compoſed.

The chords contained in the enlarged ſyſtem of Guido are twenty-two in number, reckoning b in the acutes, and bb in the ſuperacutes: otherwiſe in ſtrictneſs they are but twenty, ſeeing that b and ♮ can never occur in one and the ſame hexachord: for the deſignation of them two ſtaves of five lines each are neceſſary; and in that conjoint poſition which the aſcending ſcale requires, the hexachords will have this appearance *.

* The repreſentations of Guido's ſyſtem are many and various; for he not having exhibited it by way of diagram, ſucceeding writers have thought themſelves at liberty to exerciſe their ſeveral inventions in ſchemes and figures to explain it. Franchinus, and others after him, have encloſed each column of ſyllables, as they apply to Γ, and the letters above it, in two parallel lines, with a point at bottom, exactly like an organ-pipe; but as there is not the leaſt analogy to warrant this form, others have rejected it. Peter Aron and others have placed the hexachords in a collateral ſituation, reſembling the



tables of the decalogue. Bontempi makes uſe of the following ſcheme of the hexachords to repreſent their mutations, and dependence on each other. Hiſt. Muſ. pag. 183.

1536	ee	la
1728	dd	la ſol
1944	cc	ſol fa
2048	♮♮	mi
2187	bb	fa
2304	aa	la mi re
2592	g	ſol re ut
2916	f	fa ut
3972	e	la mi
3456	d	la ſol re
3888	c	ſol fa ut
4096	♮	mi
4374	b	fa
4608	a	la mi re
5184	G	ſol re ut
5832	F	fa ut
6144	E	la mi
6912	D	ſol re
7776	C	fa ut
8192	□	mi
9216	A	re
10368	Γ	ut

It may ſeem ſtrange, as Guido has characteriſed the durum hexachord by the key Γ, that that of F ſhould be the firſt that occurs in the ſcale; but the reaſon of this is, that the placing of F on the fourth line of the ſtave, does as much determine the ſeries as Γ on the firſt would have done; the ſame reaſon may ſerve for poſtponing the cliff C to F. As to

The above ſcheme is intended to ſhew the ſituation of the notes on the lines and ſpaces, and the relation which the hexachords bear each

g, it occurs as ſoon as is neceſſary, and not before; and here it may be remarked that g is ſituated on the third line above C, as C is on the third line above F. Farther, a ſtave of five lines, with the cliff F on the fourth, is ſuppoſed to ſignify the five lower lines of the ſcale. One with C on the third, the five above F incluſive, and one with g on the ſecond, the five above C. All this will moſt clearly appear from the two foregoing ſchemes, which exhibit an example of ingenuity and ſagacity that has ſtood the teſt of ages, and is worthy the admiration of all men.

Many have thought Guido's ſcheme defective in that it gives no ſyllable to F. Dr. Wallis was of this opinion, and ſays what a wonder it is that he did not apply to it the ſyllable SA, from the firſt word of the Adonic verſe Sancte JOANNES? Merſennus, Harmonie Univerſelle, pag. 183, ſeems to have thought much in the ſame manner, by his adding the ſyllable SI, which is uſed by the French at this day. The original introduction of this ſyllable is by him and other writers attributed to one Le Maire, a French muſician, who ſays he laboured for thirty years in vain to bring it into practice; but that he was no ſooner dead than all the muſicians of his country made uſe of it. Notwithſtanding which the general opinion is that the ſyllable SI was introduced into the ſcale by Ericius Puteanus of Dort, who lived about the year 1580, and wrote a treatiſe on muſic entitled Muſathena.

This is in ſubſtance the account which Monſ. Broſſard has given of the introduction of the ſyllable SI; but another writer, Monſ. Bourdelot, has given a very different account of this matter; for he relates that about the year 1675 a certain Cordelier introduced the ſyllable SI into the ſcale. He ſeems however to doubt the fact, as being founded only on tradition; and goes on to relate that the abbé de la Louette, maſter of the choir of the cathedral church of Paris, had aſſured him that the ſyllable in queſtion was invented, or perhaps a ſecond time brought into practice, by one Metru, a famous ſinging-maſter in Paris about the year 1676. Bourdelot adds that Le Moine, an excellent luteniſt, of ſixty years practice, had aſſured him that he knew Metru very well, and that he introduced the ſyllable SI; and that he remembered alſo a Cordelier of the convent of Ave Maria, who had made ſome variation in the ancient ſcale about the latter end of the laſt century. For theſe reaſons Bonet inclines to think that the honour of the invention might be due to the Cordelier, but that the merit of reviving it is to be aſcribed to Metru. But whichſoever of the above relations is true, it is pretty certain that both Merſennus and Broſſard are miſtaken in what they ſay reſpecting the invention of the ſyllable SI by Le Maire.

The ſame author, Bourdelot, inſinuates, that notwithſtanding the uſe of the ſyllable SI is much approved of by the French muſicians, yet in Italy they diſdain to make uſe of it, as being the invention of a Frenchman. Hiſtoire de la Muſique et de ſes Effets, par Bourdelot, Amſterd. 1725, tom. I. pag. 17.

It ſeems that the muſicians of other countries have been aware of the neceſſity of a ſeventh ſyllable in order to get rid of the difficulties which the mutations, as they are called, are attended with in the practice of ſinging; for in the Porque de la Muſica of Andrea Lorente of Alcala, publiſhed in 1672, we find the ſyllable BI applied to B♮ in the progreſſion from C to c.

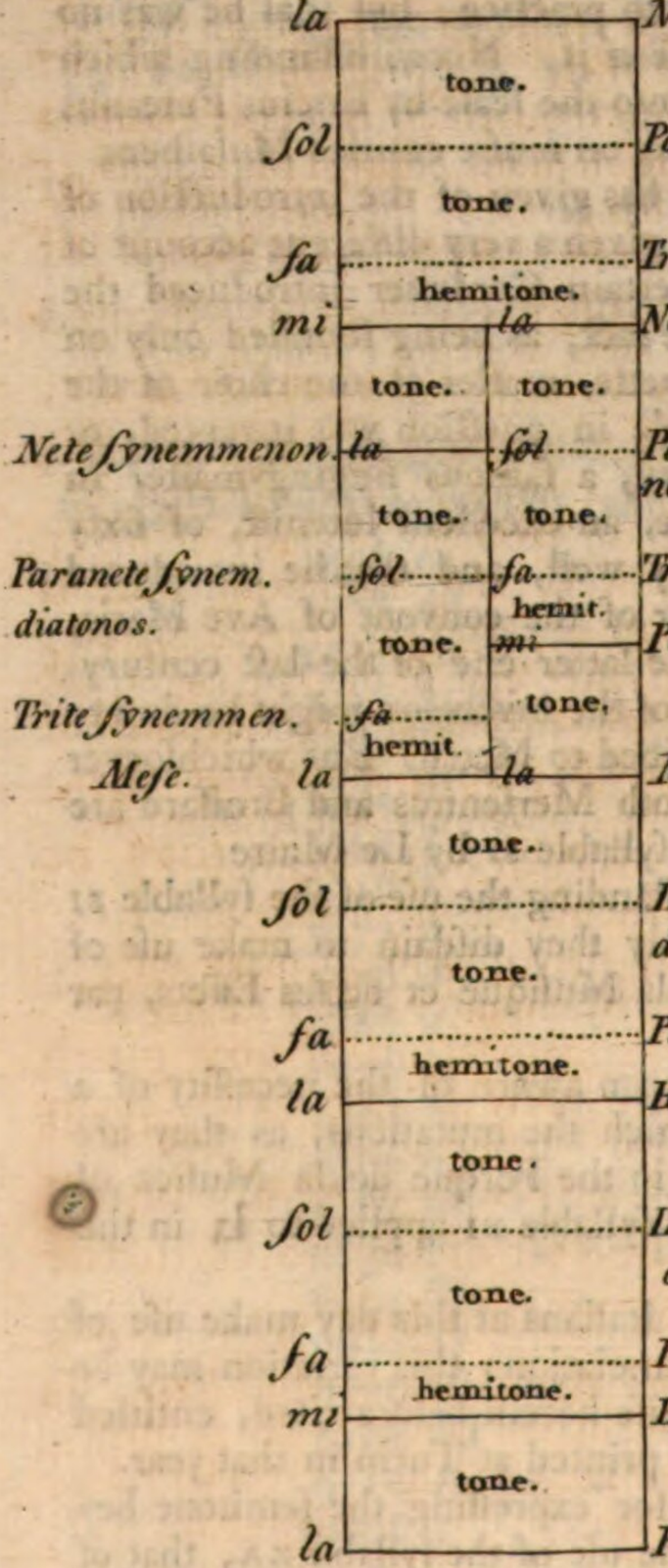
And here it may not be improper to obſerve, that the Italians at this day make uſe of the ſyllable DO inſtead of UT, as being more eaſy of pronunciation: this variation may be traced back to the year 1678, and is to be found in a treatiſe herein before cited, entitled Armonia Gregoriani, written by Gerolamo Cantone, and printed at Turin in that year.

Merſennus, Harm. Univerſ. pag. 183, intimates that for expreſſing the ſemitone between A and B b, ſome of the muſicians of his country made uſe of the ſyllable ZA, that of SI being appropriated to B♮; but this diſtinction ſeems not to prevail at this day. Monſ. Loulie, the author of Elements ou Principes de Muſique, printed at Amſterdam, 1698, rejecting the ſyllable ZA, has retained only SI; and this method of ſolmiſation is practiſed throughout France.

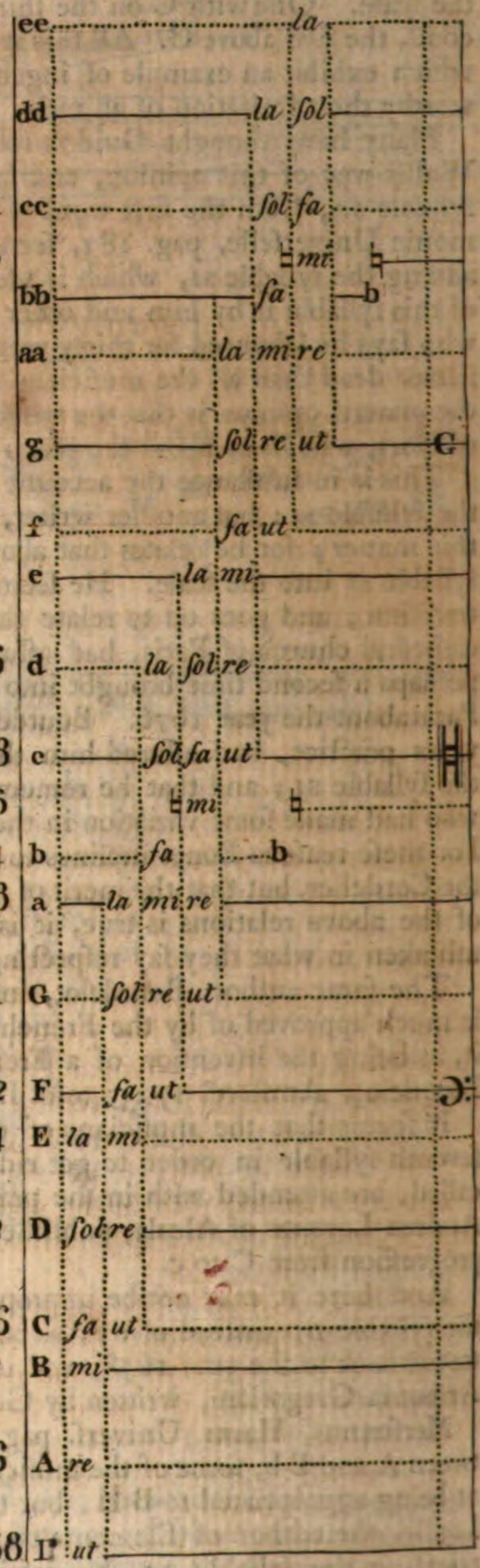
to the others: this that follows, compounded of two ſchemes, the one of Bontempi, and the other of Doctor Wallis, contains the reformed ſcale of Guido in a collateral ſituation with that of the ancients.

436

DIAGRAM OF THE ANCIENTS



SCALE OF GUIDO

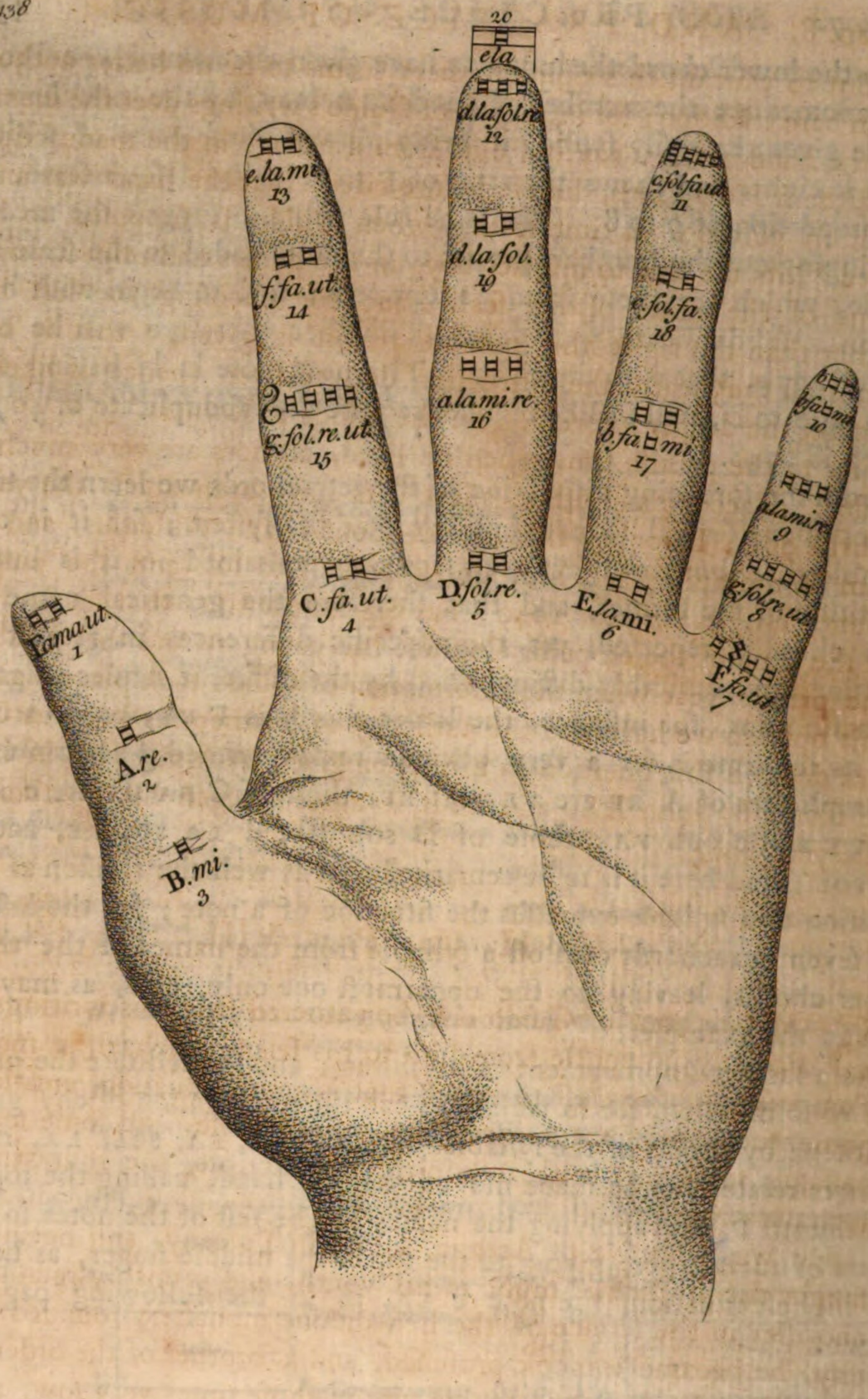


To the lower chord the moderns have given the name Hypo-Proſlambanomenos; the number aſſigned to it may, by the rule herein before given, be eaſily found, it being nine of thoſe parts of which 9216 is eight, and ſhews the ratio of Γ to A to be ſeſquioctave, in the proportion of 9 to 8. The ſame rule will alſo ſuggeſt the means of bringing out the numbers proper to the notes added to the ſcale by Guido, which are thoſe from aa upwards; for, to begin with bb, it is in a ſubduplicate ratio to b, its number therefore will be the half of 4374, that is to ſay 2187. The next note ♮♮ having the ſame ratio to ♮, will in like manner require the ſubduplicate of 4096, which is 2048.

From the foregoing diſpoſition of the tetrachords we learn the true names of the ſeveral ſounds that compoſe the ſyſtem; for it is obſervable that though in fact each ſeptenary contained in it is but a repetition of the former, and that therefore the generical name of each chord is repeated, yet their ſpecific differences in reſpect of ſituation are admirably diſtinguiſhed by the different names aſſigned to each: thus, for inſtance, the lower chords is Γ UT, or GAMUT, but its replicate is for a very obvious reaſon termed g SOL RE UT; the replicates of A RE are a LA MI RE, thoſe of C FA UT are c SOL FA UT and c SOL FA; thoſe of D SOL RE, d LA SOL RE, and d LA SOL; and here it is to be remarked that as well the reciſion as the addition of a ſyllable expreſſes the ſituation of a note; for the laſt of the ſeven hexachords cuts off a ſyllable from the names of the three upper chords, leaving to the uppermoſt one only, e la, as may be ſeen in the example.

As a farther improvement of his ſyſtem, and to facilitate the practice of ſolmiſation, for ſo we are to call the conjugation of any given cantilena by means of the ſyllables UT, RE, MI, FA, SOL, LA, moſt authors relate that he made uſe of the left hand, calling the top of the thumb Γ, and applying the names of the reſt of the notes to the joints of each finger, giving to the top of the middle finger, as being the higheſt ſituation, the note e LA, as in the following page is ſhewn.

But


20
e.la
d.la.sol.re
12
e.la.mi
13
f.fa.ut.
14
d.la.sol.
19
c.sol.fa.ut
11
c.sol.fa.
18
g.sol.re.ut.
15
a.la.mi.re.
16
b.fa.b mi.
17
b.fa.b mi
10
a.la.mi.re
9
C.fa.ut.
4
D.sol.re.
5
E.la.mi.
6
g.sol.re.ut
8
F.fa.ut
7
C.ama.ut.
1
A.re.
2
B.mi.
3

But to warrant this opinion there ſeems to be no better authority than bare tradition; for in no part of Guido's writings does the mention of the hand occur: nay it ſeems from a paſſage in the manuſcript of Waltham Holy Croſs, herein before cited, that the hand was an invention poſterior in time to that when Guido is ſuppoſed to have lived *; its uſe was to inſtruct boys in the names and reſpective ſituations of the notes of his ſcale; and for chooſing the left hand rather than the right this notable reaſon is given, 'that it being 'neareſt the heart, the inſtruction derived from thence is likely to 'make the deeper impreſſion on the minds of learners.'

As to the preciſe time when he lived, authors are very much divided. Zaccone and others aſſert it to have been about the year of Chriſt 960; Baronius, that it was about 1022; Alſtedius, and after him Bontempi, place him under pope Leo IX. and the emperor Henry III. in the year 1049; but Sigebert teſtifies that he flouriſhed in the time of the emperor Conrade the younger, and that 1028 was the preciſe year when the reformation of Guido took place; and for this opinion we have alſo the authority of Trithemius †. But Guido has decided this queſtion in a relation given by him of his invitation to Rome by John XX. and he it is agreed began his pontificate in the year 1024.

CHAP. VIII.

SOME account of Guido is to be gathered from his writings, particularly an epiſtle from him to his friend Michael, a monk of Pompoſa, and the tract to which that is an introduction, entitled Argumentum novi Cantus inveniendi: from theſe, and ſome ſcattered paſſages to be met with in ancient manuſcripts, the following memoirs are collected.

He was a native of Arezzo, a city in Tuſcany, and having been taught the practice of muſic in his youth, and probably retained as a choriſter in the ſervice of the Benedictine monaſtery founded in that city, he became a monk profeſſed, and a brother of the order of St. Benedict: the ſtate of learning was in thoſe times very low, and the

* Kircher, in the Muſurgia, tome I. pag. 115, ſays this expreſsly.
† De Viris illuſtr. ord. Bened. lib. II. cap. 74.

eccleſiaſtics had very few ſubjects for ſtudy, if we except theological controverſy, church hiſtory, logic, and aſtrology, which was looked on by them as the moſt conſiderable of the mathematical ſciences: theſe engaged the attention of ſuch members of thoſe fraternities as were endued with the moſt active, not to ſay contentious, ſpirits; while the exerciſes of devotion, the contemplating the lives of ſaints, and the qualifying themſelves for the due diſcharge of the choral duty, employed thoſe of a more aſcetic and ingenuous turn of mind. Voſſius makes Guido to have been at firſt a monk in the monaſtery of St. Leufred in Normandy*; but this is by a miſtake, which will be accounted for hereafter; ſo that the only places of his ſettlement, of which we can ſpeak with certainty, are the Benedictine monaſtery of Arezzo, the city where he was born, and that of Pompoſa in the duchy of Ferrara.

In this retirement he ſeems to have devoted himſelf to the ſtudy of muſic, particularly the ſyſtem of the ancients, and above all to reform their method of notation. The difficulties that attended the inſtruction of youth in the church-offices were ſo great, that, as he himſelf ſays, ten years were generally conſumed barely in acquiring the knowledge of the plain-ſong; and this conſideration induced him to labour after ſome amendment, ſome method that might facilitate inſtruction, and enable thoſe employed in the choral office to perform the duties of it in a correct and decent manner. If we may credit thoſe legendary accounts that are extant in old monkiſh manuſcripts, we ſhould believe he was aſſiſted in his pious intention by immediate communications from heaven: ſome ſpeak of the invention of the ſyllables as the effect of inſpiration; and Guido himſelf ſeems to have been of the ſame opinion, by his ſaying it was revealed to him by the Lord; or as ſome interpret his words, in a dream; but graver hiſtorians ſay, that being at veſpers in the chapel of his monaſtery, it happened that one of the offices appointed for that day was the above-mentioned hymn to St. John Baptiſt, written by Paulus Diaconus, and that the hearing thereof ſuggeſted this notable improvement.

We muſt ſuppoſe that the converting the tetrachords into hexachords had been the ſubject of frequent contemplation with Guido, and that a method of diſcriminating the tones and ſemitones was the

* De Scient. Mathem. cap. xxii. § 7.

one

one thing wanting to complete his invention. During the performance of the hymn he remarked the iteration of the words, and the frequent returns of UT, RE, MI, FA, SOL, LA: he obſerved likewiſe a diſſimilarity between the cloſeneſs of the ſyllable MI, and the broad open ſound of FA, which he thought could not fail to impreſs upon the mind a laſting idea of their congruity, and immediately conceived a thought of applying theſe ſix ſyllables to his new formed hexachord.

Struck with the diſcovery, he retired to his ſtudy, and having perfected his ſyſtem, began to introduce it into practice: the perſons to whom he communicated it were the brethren of his own monaſtery, from whom it met with but a cold reception, which in the Epiſtle to his friend, above-mentioned, he aſcribes undoubtedly to its true cauſe, envy; however, his intereſt with the abbot, and his employment in the chapel, gave him an opportunity of trying the efficacy of his method on the boys who were training up for the choral ſervice, and it exceeded the moſt ſanguine expectation.

The fame of Guido's invention ſoon ſpred abroad, and his method of inſtruction was adopted by the clergy of other countries: we are told by Kircher that Hermannus, biſhop of Hamburg, and Elvericus, biſhop of Oſnabrug made uſe of it; and by the authors of the Hiſtoire Litteraire de la France *, that it was received in that country, and taught in all the monaſteries in the kingdom. It is certain that the reputation of his great ſkill in muſic had excited in the pope a deſire to ſee and converſe with him, of which, and of his going to Rome for that purpoſe, and the reception he met with from the pontiff, himſelf has given a circumſtantial account of in the epiſtle before cited,

The particulars of this relation are very curious, and as we have his own authority, there is no room to doubt the truth of it. It ſeems that John XX. or, as ſome writers compute, the nineteenth pope of that name, having heard of the fame of Guido's ſchool, and conceiving a deſire to ſee him, ſent three meſſengers to invite him to Rome; upon their arrival it was reſolved by the brethren of the monaſtery that he ſhould go thither attended by Grimaldo the abbot, and Peter the chief of the canons of the church of

* Tom. VII. pag. 143, 144.

Arezzo. Arriving at Rome he was preſented to the holy father, and by him received with great kindneſs. The pope had ſeveral converſations with him, in all which he interrogated him as to his knowledge in muſic; and upon ſight of an antiphonary which Guido had brought with him, marked with the ſyllables agreeable to his new invention, the pope looked on it as a kind of prodigy, and ruminating on the doctrines delivered by Guido, would not ſtir from his ſeat till he had learned perfectly to ſing off a verſe; upon which he declared that he could not have believed the efficacy of the method if he had not been convinced by the experiment he had himſelf made of it. The pope would have detained him at Rome, but labouring under a bodily diſorder, and fearing an injury to his health from the air of the place, and the heats of the ſummer, which was then approaching, Guido left that city upon a promiſe to reviſit it, and explain to his holineſs the principles of his new ſyſtem. On his return homewards he made a viſit to the abbot of Pompoſa, a town in the duchy of Ferrara, who was very earneſt to have Guido ſettle in the monaſtery of that place, to which invitation it ſeems he yielded, being, as he ſays, deſirous of rendering ſo great a monaſtery ſtill more famous by his ſtudies there.

Here it was that he compoſed a tract on muſic, intitled Micrologus, i. e. a ſhort diſcourſe, which he dedicated to Theodald, biſhop of Arezzo, and finiſhed, as he himſelf at the end of it tells us, under the pontificate of John XX. and in the thirty-fourth year of his age. Voſſius ſpeaks alſo of another muſical treatiſe written by him, and dedicated to the ſame perſon.

Divers others mention alſo his being engaged in the controverſy with Berenger about the Euchariſt, particularly Merſennus and Voſſius; the latter of whom, who, by the manner in which he has ſpoken of Guido elſewhere, can hardly be ſuppoſed to have miſtaken another perſon for him, ſays expreſsly that in the year 1070, namely, in the time of Gregory VII. flouriſhed Guido, or Guidmundus, by country an Aretine, firſt a monk of the monaſtery of St. Leufred, and afterwards a cardinal of the church of Rome, and archbiſhop of Averſa; that while he was a monk he wrote two books on muſic to the biſhop Theodald, the firſt in proſe, the other partly in heroic verſe, and partly in rhythmical trochaics; and that he is the ſame

who

who wrote againſt Berengarius three books concerning the body and blood of our Lord in the ſacrament of the Euchariſt *. Trithemius refers him to the year 1330, and Sigebert to 1028, which latter ſpeaks alſo of the muſical notes found out by him.

Du Pin, who in his Eccleſiaſtical Hiſtory has given an account of Berenger and his errors, has enumerated the ſeveral authors that have written againſt him; among theſe he mentions Guimond or Guitmond, biſhop of Averſa, as one who, in oppoſition to Berenger, maintained the real preſence of the body and blood of Jeſus Chriſt in the Euchariſt. Nay, he goes ſo far as to cite ſeveral books of his writing in the controverſy with Berenger, as namely, a treatiſe De Veritate Euchariſtiæ, wherein he charges him with maintaining, among other errors, the nullity of infant baptiſm, and the lawfulneſs of promiſcuous embraces.

Suppoſing this to be true, and Guimond and Guido to be one and the ſame perſon, the generality of writers have done his memory an injury in repreſenting Guido as ſimply a monk, who was not only a dignitary of the church, but an archbiſhop, and a member of the ſacred college. But it ſeems that Voſſius and thoſe whom he has followed are miſtaken in theſe particulars: Bayle has detected this error, and has ſet the matter right, by relating that Guido and Guitmond were nearly contemporaries, but that it was the latter who was the monk of St. Leufred, in the dioceſs of Evreux in Normandy, afterwards biſhop of Averſa in Italy, and at length a cardinal, and who wrote three books De Veritate Corporis et Sanguinis Chriſti in Euchariſtia adverſus Berengarium, which, he adds, have been printed ſeparately, and in the Bibliotheca Patrum †.

Moſt of the authors who have taken occaſion to mention Guido, ſpeak of the Micrologus as containing the ſum of his doctrine: what are the contents of the Micrologus will hereafter be related; but it is in a ſmall tract, intitled Argumentum novi Cantus inveniendi, that his declaration of the uſe of the ſyllables, with their ſeveral mutations, and, in ſhort, his whole doctrine of ſolmiſation, is to be found. This tract makes part of an epiſtle to a very dear and intimate friend of

* De Scientiis Mathem. cap. xxii. § 7.

† Art. ARETIN [Guy] in not. Vide alſo Hiſt. Litter. de France, tom. VIII. Guitmond Evêque d'Averſe, pag. 561, where this error is taken notice of, and rectified.

Guido, whom he addreſſes thus, ‘ Beatiſſimo atque dulciſſimo fratri ‘ Michaëli ;’ * and at whoſe requeſt the tract itſelf ſeems to have been compoſed. In this epiſtle, after lamenting very pathetically the exceeding envy that his fame had excited, and the oppoſition that his method of inſtruction met with, he relates the motives of his journey to Rome, and the reception he met with there, and then proceeds to an explanation of his doctrine.

It ſeems that in the time of Guido, muſical inſtruments were either ſcarce or ill tuned, and that the only method of acquiring a true knowledge of the intervals was by means of the monochord ; for both in the Micrologus, and in this ſhorter work, of which we are now ſpeaking, the author gives directions how to conſtruct and divide properly this inſtrument ; but upon the whole he ſeems to condemn the uſe of it, comparing thoſe who depend on it to blind men ; for this reaſon he diſcovers to his friend a method of finding out an unknown cantus, which he ſays he tried on the boys under his care, who thereby became able to ſing in no greater a ſpace of time than three days what they could not have maſtered by any other method in leſs than many weeks : and this method is no other than the applying the ſyllables to the hexachords in the manner before directed. But here perhaps it may be fitting that he ſhould ſpeak for himſelf, and the following is a tranſlation of his own words.

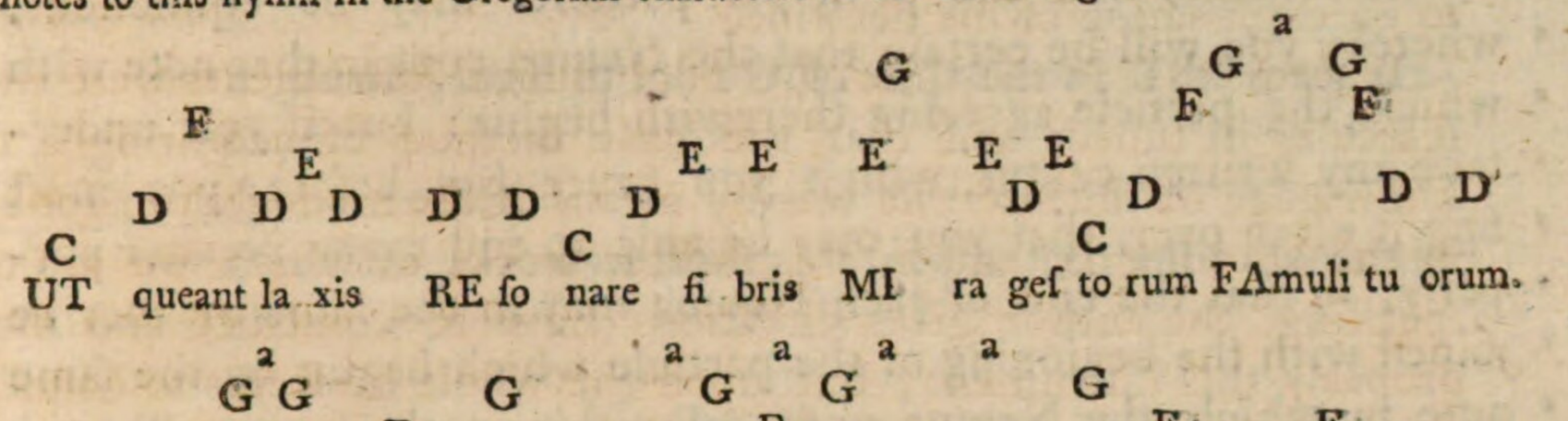
‘ I have known many acute philoſophers, not only Italians, but ‘ French, Germans, and even Greeks themſelves, who, though they ‘ have been ſought out for as maſters in this art, have truſted to this ‘ rule, the monochord alone ; but yet I cannot ſay that I think either muſicians or ſingers can be made by the help of it. A ſinger ‘ ought to find out and retain in memory the elevations and depreſſions of notes, with their ſeveral diverſities and properties ; and ‘ this by our method you may attain to do, and alſo be able to communicate the means of doing it to others ; for if you commit to ‘ memory any Neuma, ſo as that it may immediately occur to you ‘ when you find it in any cantus, then you will directly and without ‘ heſitation be able to ſound it : and this Neuma, whatever it be, ‘ being retained in your memory, may with eaſe be applied to any ‘ new cantus of the ſame kind. The following is what I made uſe ‘ of in teaching the boys.

* The copy inſerted in Baronius reads, ‘ Chariſſimo atque dulciſſimo, &c.

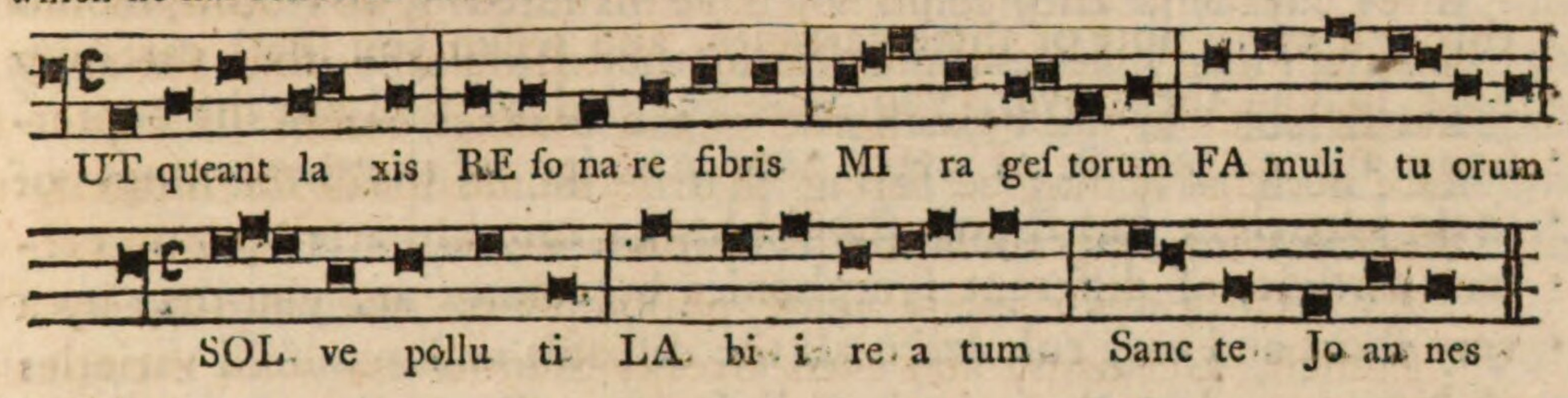
‘ UT

UT queant laxis REſonare fibris
MIra geſtorum FAmuli tuorum,
SOLve polluti LAbii reatum
Sancte Joannes *

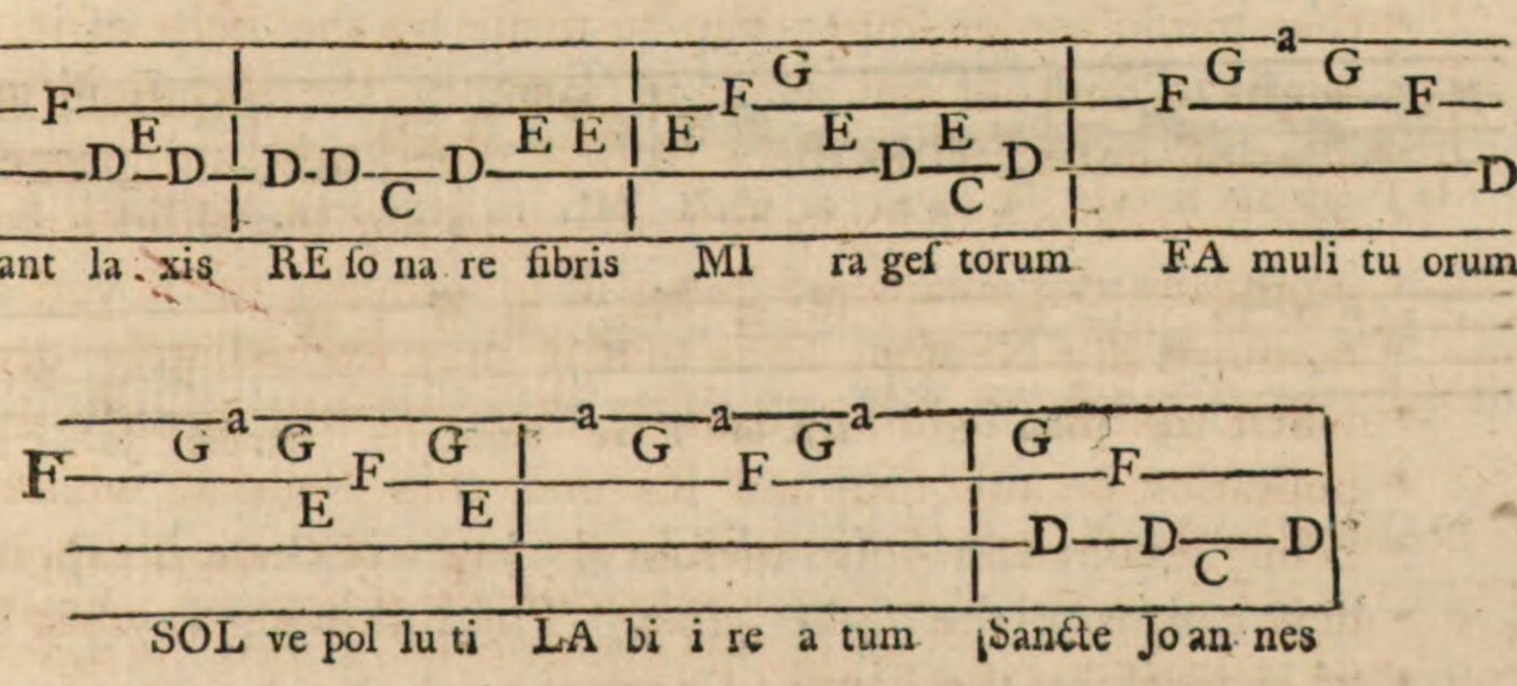
* Martini, in his Storia della Muſica, vol. I. pag. 180, from a manuſcript in his poſſeſſion, written in praiſe of Guido, and, as he conjectures, in the ſixteenth century, has given the notes to this hymn in the Gregorian characters in the following order.



which he has rendered thus in modern characters:



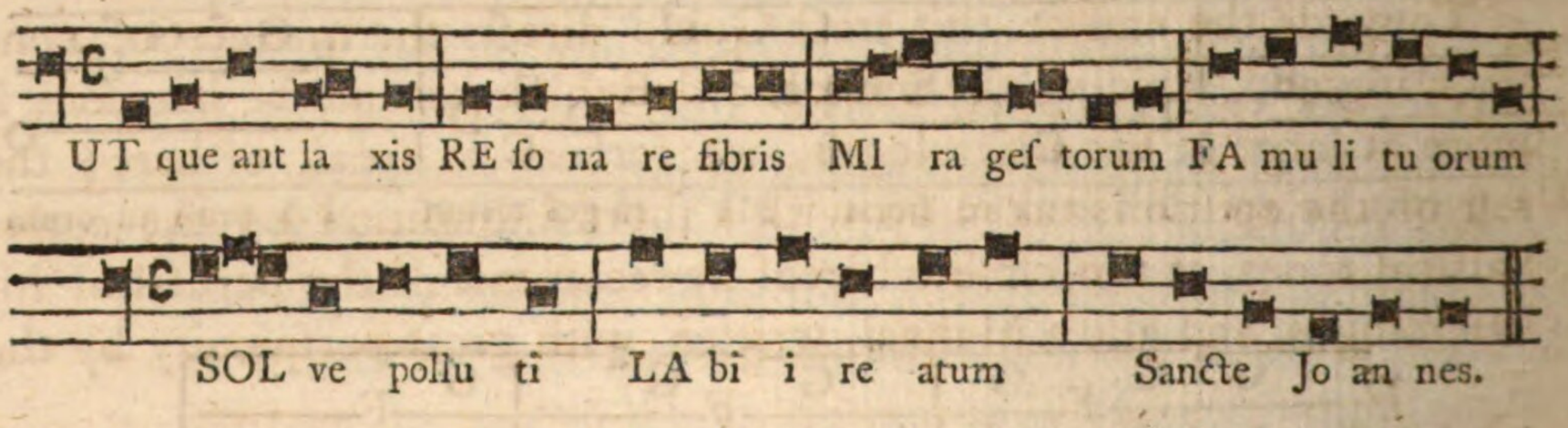
Pedro Cerone and Berardi, the one in his treatiſe De la Muſica, lib. II. cap. 44, and the other in his Miſcellanea Muſicale, part II. pag. 55, give it in this form.



which they both render thus:

UT

'In the above ſymphony you ſee ſix different particles, which are 'to be applied to as many different notes; and whenever the finger 'is able to apply theſe to ſuch of the ſix notes as they properly be-'long to, he will be able to ſing his devotions with eaſe. When 'you hear any Neuma, examine in your own mind which of theſe 'particles does beſt agree with its ending, ſo as that the final note 'of the Neuma, and the principal particles may be equiſonous, 'whereby you will be certain that the Neuma ends in that note with 'which the particle agreeing therewith begins: but if you under-'take any written cantus which you never ſaw before, you muſt 'ſing it often over, that you may be able to end every Neuma por-'perly, ſo that the end of each Neuma may in the ſame manner be 'joined with the beginning of the particle which begins by the ſame 'note in which the Neuma ends. By this method you will pre-'ſently be able to ſing any new cantus by the notes; and 'when you hear any that is not noted, you will ſoon perceive 'how it is to be written down, in the doing whereof this rule 'will greatly aſſiſt you. I have ſet down ſome ſhort ſymphoneis 'through every note of theſe particles, and when you ſhall carefully 'have looked them over, you will be glad to find out the depreſ-'ſions and elevations of every note in order in the beginnings of 'theſe particles: but if you ſhould have a mind to attemperate cer-'tain particles of different ſymphonies by connexion, you may by a 'very ſhort and eaſy rule learn all the difficult and manifold varieties 'of Neumas; but theſe cannot all be ſo well explained by letter, 'and would be more plainly opened in a familiar colloquy.



Berardi adds, that the method of notation by the letters of Gregory, as in the above example, was uſed in his time in Hungary, and other parts of Germany. He alſo cites as paſſage from the Practica Muſica of Herman Finek, or Fink, to prove that theſe were the notes which Guido applied to the hymn 'Ut queant laxis.' Fink has aſſerted this fact on the authority of Albertus Magnus, who wrote on muſic, and lived in the thirteenth century.

A
F Alme rector mores nobis ſacrato ; Summe pater ſer-
D
A
F vis tuis miſerere ; Salus noſtra honor noſter eſto Deus.
D
A
F Deus, judex juſtus fortis, et patiens : Tibi totus ſer-
D
A
F vit mundus uni, Deus. Stabunt juſti ante dominum
D
A
F Semper læti : Domino laudes omnis creatura dicat *.

He then proceeds thus : ' In writing we have twenty-three letters, ' but in every cantus we have only ſeven notes ; for as there are ' ſeven days in a week, ſo are there ſeven notes in muſic, for all that ' are added above are the ſame, and are ſung alike through the ' whole, differing in nothing but that they are ſounded doubly ' higher. We ſay there are ſeven grave and ſeven acute, and that ' the ſecond order of ſeven letters is written different from the other ' in this manner.

a	b	c	d	e	f	g
A	B	C	D	E	F	G

Towards the end of this tract Guido directs the manner of conſtructing and dividing the monochord, which becauſe he has done it more at large in the Micrologus, we forbear to ſpeak of here ; the reſt of the epiſtle is taken up with a ſhort diſquiſition on the eccleſiaſtical tones, at the cloſe whereof he recommends the peruſal of his Micrologus, and alſo a Manual, written with great perſpicuity by the

* It is ſuppoſed that the above are the initial ſentences of ſome hymns or other offices anciently uſed in the church, and which were part of the choral ſervice. Guido has intimated that theſe examples can hardly be rendered intelligible without a verbal explanation ; but it is conjectured by the letters D F A, that they are to be ſung in the firſt of the eccleſiaſtical tones, that having A for its dominant, and D for its final.

moſt

moſt reverend abbot Obdo *, from whoſe example he owns he has ſomewhat deviated, chooſing, as he ſays, to follow Boetius, though he gives it as his opinion that his work is fitter for Philoſophers than Singers.

The Micrologus, though, as its title imports, a ſhort diſcourſe, is conſiderably longer than the former tract. The title of it, as given by ſome tranſcriber of his manuſcript, is, Micrologus, id eſt brevis Sermo in Muſica, editus a Domine Guidone piiſſimo Monacho et peritiſſimo Muſico.

In this tract too the author complains very feelingly of the envy of the times, and the malignity of his detractors.

In the dedication of the Micrologus to Theodald, the biſhop of Arezzo, his dioceſan, Guido confeſſes the goodneſs of his patron in vouchſafing to become his aſſociate in the ſtudy of the Holy Scriptures, which he attributes to a deſire to comfort and ſupport him under the weight of his bodily and mental infirmities, and acknowledges, that if his endeavours are productive of any good to mankind, the merit of it is due to his patron, and not to him. He ſays that when muſic was employed in the ſervice of the church, he laboured in the art not in vain, ſeeing that his diſcoveries in it were made public by the authority, and under the protection of his patron, who as he had regulated the church of St. Donatus, over which it was his office to preſide, ſo had he rendered the ſervants thereof, by thoſe privileges by him conferred on them, reſpectable amongſt the clergy. He adds, that it is matter of ſurprize to him to find that the boys of the church of Arezzo ſhould, in the art of modulation, excel the old men of other churches; and profeſſes to explain the rules of the art for the honour of their houſe, not in the manner of the philoſophers, but ſo as to be a ſervice to their church, and a help to their boys, for that the art had a long time lain hid, and, though very difficult, had never been ſufficiently explained.

The dedication is followed by a prologue, in which the author attributes to the grace of God the ſucceſs of his endeavours to facilitate the practice of muſic; which ſucceſs he ſays was ſo great, that the boys taught by his rules, and exerciſed therein for the ſpace of a month, were able to ſing at firſt ſight, and without heſitation, muſic

* Odo of Cluni, of whom, and alſo of his Enchiridion, ſee an account in chap. 6. of this book.

they

they had never heard before, in ſuch a manner as to ſurpriſe moſt people.

It appears, as well from the epiſtle to his friend Michael, as from the Micrologus, that in the opinion of Guido the only way of coming at a knowledge of the intervals ſo as to ſing them truly, was by means of the monochord; for which reaſon, though he condemns the uſe of it for any other purpoſe than the bare initiation of learners in the rudiments of ſinging, he conſtantly recommends the ſtudy of it to young people. In the very beginning of the Micrologus he ſays, 'Whoever deſires to be acquainted with our exerciſe, muſt learn 'ſuch ſongs as are ſet down in our notes, and practiſe his hand in 'the uſe of the monochord, and often meditate on our rules, until 'he is perfect in the power and nature of the notes, and is able to 'ſing well at firſt ſight; for the notes, which are the foundation of 'this art, are beſt to be diſcerned in the monochord, by which alſo 'we are taught how art, imitating nature, has diſtinguiſhed them.'

Guido propoſes that the monochord ſhall contain twenty-one notes, concerning the diſpoſition whereof he ſpeaks thus.

'Firſt ſet down Γ Greek, which is added by the moderns, then 'let follow the firſt ſeven letters of the alphabet, in capitals, in this 'manner, A, B, C, D, E, F, G; and after theſe the ſame ſeven letters in the ſmaller characters; the firſt ſeries denotes the graver, 'and the latter the acuter ſounds. Nevertheleſs, among the ſmaller 'letters we inſert occaſionally b or ♮, the one character being round, 'the other ſquare, thus a, b, ♮, c, d, e, f, g; to theſe add the tetrachord of ſuperacutes, in which b is doubled in the ſame manner, 'aa, bb, ♮♮, cc, dd, ee. Theſe letters make in all twenty-two, 'Γ, A, B, C, D, E, F, G, a, b, ♮, c, d, e, f, g, aa, bb, ♮♮, cc, dd, 'ee, the diſpoſition whereof has hitherto been ſo perplexed as not to 'be intelligible, but it ſhall here be made moſt clear and plain, even 'to boys.'

For the diviſion of the monochord he gives the following directions.

'Gamma Γ being placed at one extremity of the monochord, di'vide the ſpace between that and the end of the chord into nine 'parts, and at the end of the firſt ninth part place A, from whence 'the ancients fixed their beginning; then from A divide the ſpace 'to the end of the chord into nine parts, and in the ſame manner

‘ place B; then returning to Γ, divide the whole ſpace to the end
‘ into four parts, and at the end of the firſt fourth part place C. In
‘ the ſame manner as from Γ you found C, by a diviſion of four
‘ parts, you will from A find D; from B, E; from C, F; from D,
‘ G; from E, a acute; from F, b round; the reſt that follow are
‘ eaſily found by a biſection of the remaining parts of the line in
‘ the manner above directed, as for example, in the middle be-
‘ tween B and the end place ♮. In like manner from C you
‘ will find a new c; from D a new d; from E another e; from
‘ F another f; and from G another g; and the reſt in the ſame
‘ manner, proceeding upwards or downwards, ad infinitum, un-
‘ leſs the precepts of the art ſhould by their authority reſtrain it.
‘ Out of the many and divers diviſions of the monochord, I have ſet
‘ down this in particular, it being eaſily to be underſtood, and when
‘ once underſtood is hardly to be forgotten.—Here follows another
‘ method of dividing the monochord, which, though not ſo eaſily to
‘ be retained, is more expeditiouſly performed. Divide the whole
‘ into nine parts, the firſt part will terminate in A, the ſecond is va-
‘ cant; the third in D, the fourth vacant; the fifth a, the ſixth d,
‘ the ſeventh aa, the reſt vacant. Again, divide from A to the end
‘ into nine parts; the firſt part will terminate in B, the ſecond will be
‘ vacant, the third E, the fourth vacant, the fifth ♮, the ſixth e, the
‘ ſeventh ♮♮, the reſt vacant: again, divide the whole from Γ to the
‘ end into four parts, the firſt will terminate in C, the ſecond in G,
‘ the third in g, and the fourth finiſhes. Divide from C to the end
‘ likewiſe into four parts, the firſt part will end in F, the ſecond in
‘ c, the third in cc, and the fourth finiſhes. Divide from F into
‘ four parts, the firſt will end in b round, the ſecond in f: divide
‘ from b round into four parts, in the ſecond you will find bb round,
‘ the reſt are vacant. Divide from aa into four parts, the firſt will
‘ be dd, the reſt are vacant. For the diſpoſition of the notes theſe
‘ two methods of diviſion are ſufficient; the firſt is the more eaſy to
‘ be remembered, the ſecond the more expeditious.’

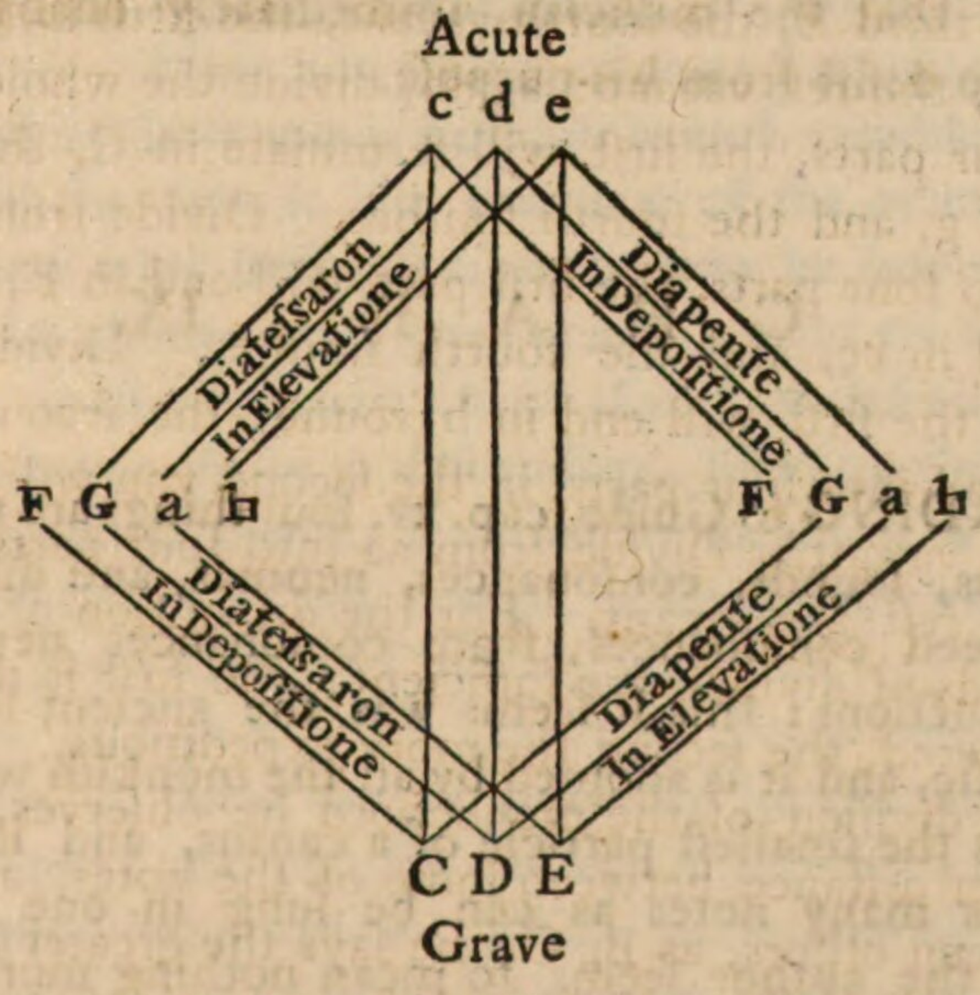
Upon this diviſion of the monochord he obſerves, that there appears a greater diſtance between ſome of the notes, as Γ, A, and A, B, than between others, as B, C: he ſays the greater diſtance is called a tone, and the leſſer a ſemitone, from ſemis an half; that a ditone is an interval conſiſting of two tones, as C, D, E, and that that is called a ſemiditone which contains only a tone and half, as

from

from D to F. He ſays that when between any two notes there occurs in any order whatever, two tones and a ſemitone, as from A to D, from B to E, and from C to F, the extreme ſounds make a diateſſaron, but that a diapente is greater by a tone; as when between any two notes there occur three tones and a ſemitone, as from A to E, or from C to G. He reckons up ſix conſonances, that is to ſay, the tone, ſemitone, ditone, ſemiditone, diateſſaron, and diapente, to which number he ſays may alſo be added the diapaſon as a ſeventh; but that as it is ſeldom introduced, it is not ſo commonly ranked among them *.

In the ſeventh chapter of the Micrologus the author treats of the affinity of notes, or, in other words, of the conſonances; thoſe of the diateſſaron and diapente he explains by the following figure.

In the eighth he ſhews the affinity between b and ♭, and diſtinguiſhes between the diateſſaron and diapente in this diagram.



* The manuſcript muſt certainly be erroneous in this place, for the ſemitone can in no ſenſe whatever be deemed a conſonance; and as to the diapaſon, it is ſo far from being ſeldom introduced, that it is the moſt uſual and perfect of all the conſonances.

In the twelfth and thirteenth chapters he ſpeaks of the diviſion of the four modes into eight, and ſays that as there are eight parts of ſpeech, and eight forms of bleſſedneſs, i. e. beatitudes, ſo ought there to be eight modes in muſic. In the fourteenth chapter he treats more particularly of the modes, which he calls Tropes, and of the effects of muſic: of theſe he ſays their properties are ſo different, that in the ſame manner as a perſon accuſtomed to different countries is able out of ſeveral men placed before him, to ſay 'this 'is a Spaniard, this an Italian, this a German, and this other a 'Frenchman;' ſo may one that is ſkilled in muſic by their diverſities diſtinguiſh the tropes. Farther he aſcribes to the tropes different properties; for 'one perſon,' ſays he, 'delights in the broken leaps 'of the ſecond authentic; another in the ſoftneſs of the third plagal; 'a third ſhall be delighted with the garrulity of the fourth authen-'tic, and another ſhall approve the mellifluous ſweetneſs of the 'fourth plagal.' As to the power of muſic, he ſays it is ſo great as to cure many diſeaſes of the human body; he cites a relation of a frantic perſon who was reſtored to reaſon by the muſic of Aſclepiades the phyſician; and mentions alſo that a certain other perſon was by the ſound of the lyre, ſo ſtirred up to luſt, that he attempted to force into the chamber of a young woman with intent to violate her chaſtity, but that the muſician, immediately changing the mode, cauſed him to deſiſt from his purpoſe.

CHAP. IX.

ACCORDING to Guido, cap. xv. four things are required in every cantus, ſounds, conſonances, neumas, and diſtinctions: from ſounds proceed conſonances, from conſonances neumas, and from neumas diſtinctions: this it ſeems was the ancient ſcholaſtic diviſion of vocal muſic, and it is adopted by all the monkiſh writers on the art. A Neuma is the ſmalleſt particle of a cantus, and is elſewhere ſaid to ſignify as many notes as can be ſung in one reſpiration. By diſtinctions the author ſeems to mean nothing more than the different

ferent meaſures of time, which, for ought that any where appears to the contrary, were regulated ſolely by the metre of the verſe to which the notes were ſung. Speaking of neumas, he ſays they may be reciprocated, or return by the ſame ſteps as they proceeded by; and adds that a cantus is ſaid to be metrical when it ſcans truly, which, if it be right, it will do even if ſung by itſelf. Neumas, he ſays, ſhould correſpond to neumas, and diſtinctions to diſtinctions, according to the perfectly ſweet method of Ambroſius. Farther he ſays that the reſemblance between metres and ſongs is not ſmall, for that neumas anſwer to feet, and diſtinctions to verſes; the neuma anſwers to the dactyl, ſpondee, or iambic; the diſtinction to the tetrameter, the pentameter, or the hexameter, and the like. He adds, 'Every cantus ſhould agree with the ſubject to which it is 'adapted, whether it be grave, tranquil, jocund, or exulting; and 'that towards the end of every diſtinction the notes ſhould be thinly 'diſpoſed, that being the place of reſpiration; for we ſee that when 'race-horſes approach the end of the courſe they abate of their ſpeed, 'and move as if wearied.'

Cap. xvi. he treats of the manifold variety of ſounds and neumas, and ſays that it ought not to ſeem wonderful that ſuch a variety ſhould ariſe from ſo few notes, ſince from a few letters ſyllables are formed, which, though not innumerable, do yet produce an infinite number of parts. 'How many kinds of metre' adds he, 'ariſe out of a 'few feet, and by how many varieties is each capable of diverſifica-'tion? but this he ſays is the province of the grammarians.' He proceeds to ſhew what different neumas may be formed from the ſix conſonances; he aſſumes that every neuma, or, as we ſhould now ſay, every paſſage, muſt neceſſarily either aſcend or deſcend; an aſcending neuma he terms Arſis, a deſcending, Theſis; theſe he ſays may be conjoined: and farther he ſays that by means of a total or partial elevation or depreſſion of any neuma, different combinations may be formed, and a great variety of melody produced.

In cap. xvii. he lays it down as a rule, that as whatever is ſpoken may be written, ſo there can be no cantus formed but what may be deſigned by letters; and here he exhibits a rule for a kind of extemporaneous muſical compoſition, which muſt doubtleſs appear very ſtrange to a modern: he ſays in ſinging no ſound can be uttered but

by

by means of one or other of the five vowels, and that from their changes a ſweet concord will enſue; he therefore firſt directs the placing the letters of the monochord, and the vowels under them in this order:

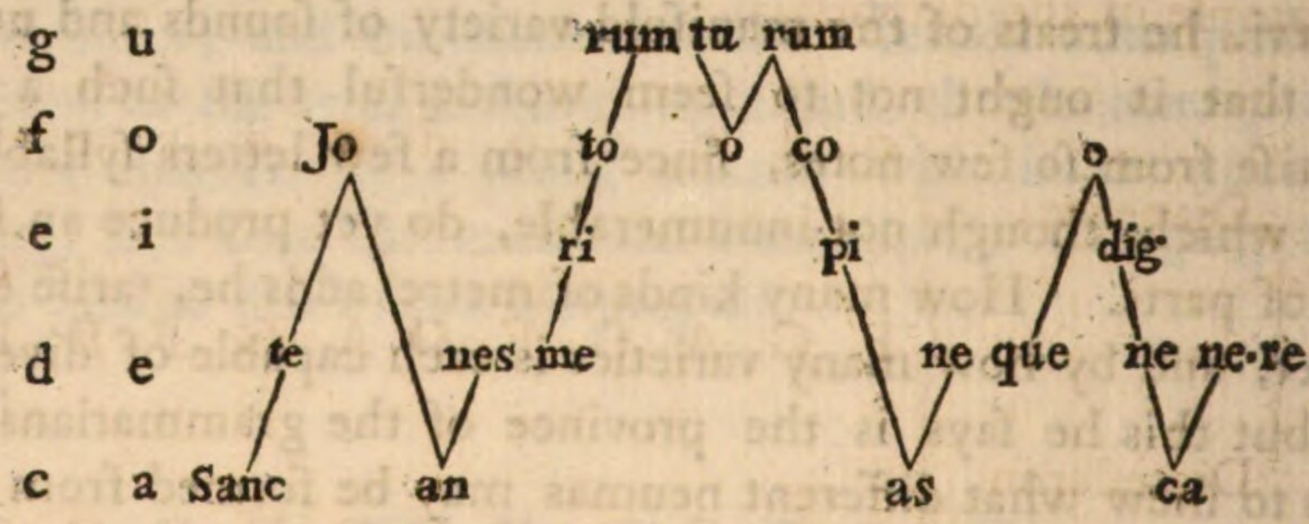
Γ A B C D E F g a ♮ c d e f g a

a e i o u a e i o u a e i o u a

And, to exemplify their uſe, recommends the taking ſome ſuch known ſentence as this:

Sancte Joannes, meritorum tuorum copias, nequeo digne canere.

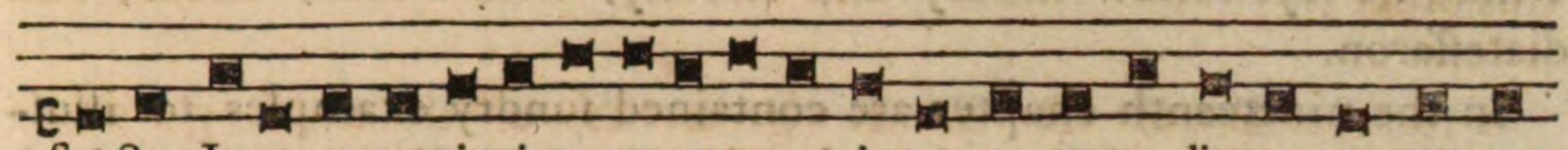
In this example the vowels determine the muſic; for as in the above ſcheme the power of each ſound is transferred to its correſpondent vowel, the ſucceſſion of the vowels will exhibit a ſeries of ſounds to which every ſyllable may be ſung.



It is clear from the connection between the vowels and the letters of the monochord, that the diapente here made uſe of is taken from among the acutes; becauſe in the diſpoſition above made, the vowel a anſwers to Γ; but had he choſen the graves for an example, the progreſſion of the cantus had been preciſely the ſame; for as d is to c, ſo is A to Γ, and as f is to c, ſo is C to Γ; as g is to c, ſo is D to Γ, and ſo of the reſt.

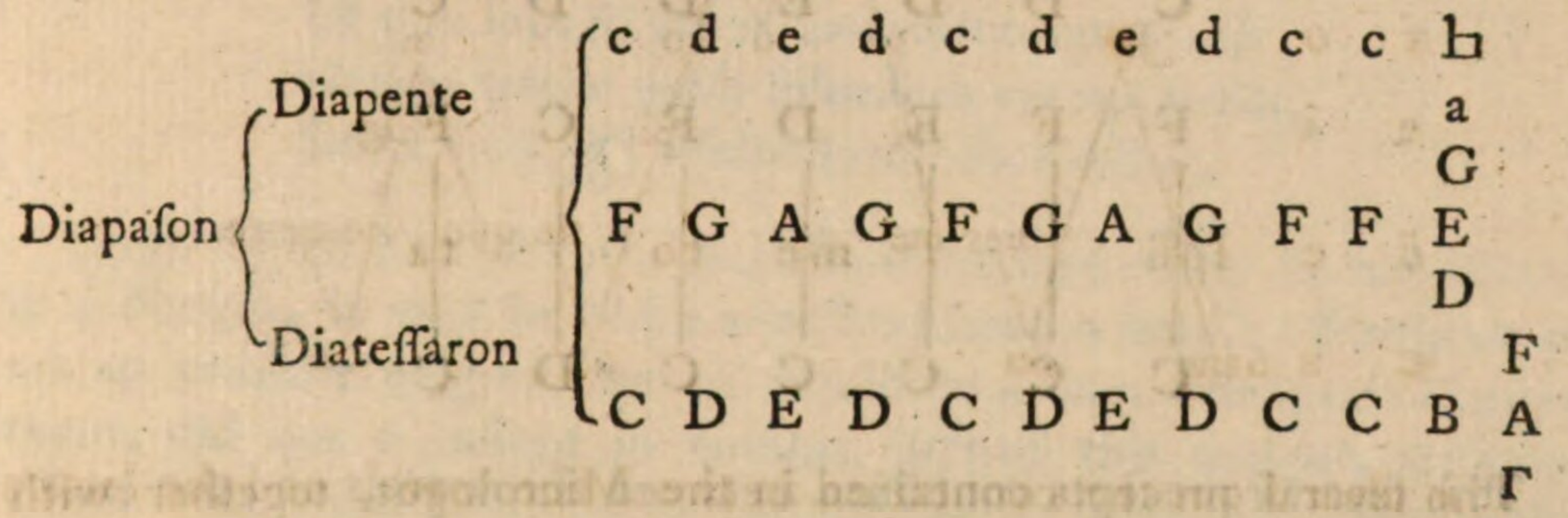
This it muſt be confeſſed is but a fortuitous kind of melody; it ſeems however to have ſuited well enough with the ſimplicity of the times, which affords us no reaſon to believe that the art of compoſing muſic

was arrived at any great degree of perfection. By the rule here given the above cantus may eaſily be rendered into modern notes, in which it will have this appearance.



Sancte Jo an nes, meritorium tu o rum copias, ne queo digne canere.

The eighteenth chapter of the Micrologus is an explanation of the Diaphonia, by which term we are to underſtand thoſe precepts that teach the uſe of the organ, and its application to vocal melody; concerning which Guido ſays, that ſuppoſing the ſinger to utter any given ſound, as for inſtance A, if the organ proceeds to the acutes, the A may be doubled, as A D a, in which caſe it will ſound from A to D, a diateſſaron, from D to a, diapente, and from A to a, a diapaſon: he farther ſays, that theſe three kinds, when uttered by the organ, commix together with great ſweetneſs, and that the apt copulation of notes is called Symphony. He gives this which follows as an example of the diaphonia.



And adds that a cantus may be doubled by the organ, and the organ itſelf in the diapaſon, as much as the organiſt pleaſes. He ſays that having made the doubling of ſounds ſufficiently clear, he will explain the method of adapting grave ſounds to a cantus, in the doing whereof he premiſes that the Diaphonia admits not of the ſemitone nor diapente, but that it accepts of the tone, ditone, ſemiditone, and diateſſaron, among which conſonances the diateſſaron holds the principal place. Of the modes, which he calls Tropes, he ſays that ſome are fit, ſome more fit, and others moſt fit, for the Diaphonia; and

theſe

theſe degrees of fitneſs ſeem to bear a proportion to the number of concordant intervals in each. As an inſtance of the higheſt degree of this kind of perfection, he mentions the third and fourth tones, which he ſays follow kindly and ſweetly, with a tone, ditone, and diateſſaron.

In the nineteenth chapter are contained ſundry examples to illuſtrate the precepts delivered in the chapter preceding, among which are the following.

F	F	G	G	F	F	D	E	F	E	D	C
Ip|ſi		ſo			li						
C	C	D	G	C	C	C	C	C	C	C	C

F	G	G	A	G	G	F
S|er	v|o	f|i		d	e|m	
C	D	D	E	D	D	C

F	F	E	D	F	C	F
Ip|ſi			m|e	t|o		t|a
C	C	C	C	C	D	C

The ſeveral precepts contained in the Micrologus, together with the examples above given, may ſerve to ſhew the inartificial contexture of the muſic in thoſe early days: they farther tend to confirm thoſe accounts which carry the antiquity of the organ back to a time, when, from the uncultivated ſtate of the mechanic arts, it would hardly be ſuppoſed that an inſtrument ſo wonderfully conſtructed could have been fabricated *.

* The ſtate of the mechanic arts, ſo far as they relate to the conſtructing and making the ſeveral utenſils and conveniences for domeſtic life, would, were it poſſible to come at it, afford great ſatisfaction to a curious enquirer, as it would enable him, by a compariſon of two very remote periods, to eſtimate the degree of perfection at which we are now arrived. Few of thoſe perſons, who are curious enough to attend to the manual operations of our Engliſh

After delivering the precepts of the Diaphonia, the author from Boetius relates the diſcovery of the conſonances by Pythagoras. He exhorts ſuch as mean to become excellent in muſic to take the monochord for their guide, and repeats his inſtructions for making and dividing it.

A little farther on he reſumes the conſideration of the tones, and is ſomewhat preciſe in aſcertaining their reſpective limits, and diſtinguiſhing between the authentic and the plagal. He ſays that the ſame antiphon may be ſung in different ſounds without changing the harmony: or, in other words, that it may be ſo tranſpoſed, as that the ſounds may bear the ſame relation to each other as if not tranſpoſed. He ſays that the ſecond letter, by which we are to underſtand ♮, is rejected as ignoble, and unfit to be the principal of any tone: the reaſon of this is, that its fifth is defective, as being leſs than a true diapente by a ſemitone.

The reſidue of this tract, the Micrologus, conſiſts of miſcellaneous reflections on the uſe and efficacy of muſic: towards the cloſe of it is the following tetraſtic.

Quaſdam lineas ſignamus variis coloribus
Ut quo loco ſit ſonus mox diſcernat oculus;
Ordine terciæ vocis ſplendens crocus radiat,
Sexta ejus, ſed affinis flavo rubet minio.

Upon which he obſerves, that if a letter and colour be not affixed to a Neuma, it will be 'like a well without a rope.' Theſe verſes are an abſolute enigma, and it would be a vain attempt to explain them, did not a paſſage in another part of this author's writings afford ſome intimation that by the red line he intended to denote the F, and by the yellow the C cliff: however we are not to look on this method of diſtinguiſhing the cliffs by lines of different colours as

Engliſh artificers, are ignorant that they work with an amazing degree of truth and accuracy. A very curious book, now extant, called the Book of St. Alban's, written by dame Julyans Bernes, prioreſs of the nunnery of Sopwell, near St. Alban's, deſcribes the method of making an angling rod in the year 1496; and gives us to underſtand that the mechanics of that time thought the neateſt method of hollowing a ſtick for that purpoſe was the burning it through with a hot ſpit; and it is not unlikely but that four hundred years before that, an organ-pipe was perforated in no better a manner: and if we ſuppoſe the ſame want of neatneſs in the various other parts of that complicated machine of which we are now ſpeaking, we may fairly conclude that both the organ and the muſic of the eleventh century were equally rude and inartificial.

the invention of Guido, ſince it appears to have been in uſe ſo early as the year 900, which is at leaſt an hundred years before the time when he wrote.

He ſeems to cloſe his tract with an aſſurance that he has made the rules clear, and laid open to ſingers the regular and perfect manner of ſinging, in a method unknown to former times. But he immediately reſumes his ſubject in theſe words, 'Temporibus noſtris 'ſuper omnes homines fatui ſunt cantores;' and goes on to explain ſome particulars that are before but obſcurely treated of; in the doing whereof Guido takes occaſion to repreſent the woful ſtate of muſic, and the deplorable ignorance of ſingers at the time when he wrote; the whole is curious, and will be beſt underſtood if given in his own words, which are nearly theſe.

'In theſe our times no ſet of men are ſo infatuated as ſingers; in 'every other art we improve, and in time attain to a greater degree 'of knowledge than we derived from our teachers: thus by reading 'over the ſimple pſalter, boys are enabled to read other books; the 'countryman by uſe and exerciſe acquires the knowledge of agricul-'ture; he who has pruned one vine, planted one ſhrub, or loaded 'one aſs, is able not only to do the ſame again, but to do it better; 'but, miſerable diſciples of ſingers, they, though they ſhould practice 'every day for an hundred years, would never be able to ſing even 'one little antiphon themſelves, nor without the help of a maſter, 'but loſe as much time in attaining to ſing, as would have enabled 'them fully to underſtand the divine writ. And what is more to 'be lamented is, that many clerks of the religious orders, and 'monks too, neglect the pſalms, the nocturnals, and vigils, and 'other leſſons of piety, by which we are led to everlaſting glory, 'while they with a moſt fooliſh and aſſiduous labour proſecute the 'art of ſinging, which they are never able to attain. Who then can 'refrain from tears to ſee ſuch an evil creep into the church? from 'whence ſuch diſcord enſues, that we are unable to celebrate the di-'vine offices. Nor is this all, for this ignorance of their duty begets 'reproach, from whence proceeds contention; ſcarce the ſcholar 'with the maſter can agree, and much leſs one fellow ſcholar with 'another. Neither is there any uniformity of muſic at this day in 'the churches; for there are as many kinds of antiphons as there are 'maſters; inſomuch that no one can ſay as heretofore, this is the

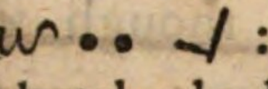
'antiphon

'antiphon of Gregory, of Leo, or Albert, or any other; but every 'one either varies theſe, or forms others at his pleaſure. It ought 'not therefore to give offence if I contend with the corruptions of the 'times, and endeavour to render the practice of muſic conformable 'to the rules of the art: and as all theſe corruptions have ariſen from 'the ignorance of muſicians, I muſt earneſtly requeſt that no one 'will preſume to make antiphons, unleſs he be well ſkilled in the 'art of forming them according to the known and eſtabliſhed rules 'of muſic; it being moſt certain that he who is not the diſciple of 'truth will be a teacher of error. And for theſe reaſons I intend, 'with the help of God, to note down a book of antiphons, by means 'whereof any aſſiduous perſon may attain to ſing truly, and without 'heſitation; and if any one doubts the efficacy of our method, let 'him come and ſee what our little boys can do, who labouring un-'der their ignorance, as not being able to read the common pſalter, 'are yet capable of ſinging the muſic to it, and can without the 'help of a maſter ſing the notes, though they cannot pronounce 'the words.'

The letters of Gregory, he ſays, 'are ſo diſpoſed, that if a note be 'repeated ever ſo often it will always have the ſame character; but the 'better to diſtinguiſh the order of notes, lines are drawn near to each 'other, and notes are placed on theſe lines, and alſo on the ſpaces be-'tween the lines.' He adds, 'we make uſe of two colours, yellow 'and red, by means whereof I give a rule very uſeful and convenient 'for finding out the tone and the letter of the monochord, to which 'any given neuma is to be referred. There are ſeven letters in the 'monochord; and wherever you ſee the yellow it is the ſign of the 'third letter, and wherever red it denotes the ſixth, whether the 'colours are drawn in the lines or over them.'

This is the paſſage above hinted at as containing a ſolution of the enigmatical tetraſtic at the latter end of the Micrologus: the author has ſaid that the letters of the monochord are ſeven; it is ſuppoſed that he means to exclude Γ from the number, as the chord of which that letter is a ſign is aſſumed; if ſo, the letters muſt be A, B, C, D, E, F, G, and then the yellow line will denote the place of C, and the red that of F. Father Martini, who had an opportunity of conſulting a greater variety of miſſals and other manuſcripts than are to be found in this country, makes no ſcruple to aſſert that this is Guido's

meaning, and produces divers fragments from ancient books of the church-offices, which have both a yellow and a red line, the firſt ever with the letter C, and the other with F, in the uſual place ot the cliff.

The examples of the uſe of the yellow and red lines produced by Martini are very many, but as the lines do all ſtand ſingle, and as upon, above, and below them divers characters are placed, which bear not the leaſt reſemblance to the points uſed by Guido and his ſucceſſors, it may be queſtioned whether this variety of colours was not originally adapted to a method of notation in uſe before his time, notwithſtanding that it coincides ſo well with the ſtave. But Kircher, in the Muſurgia, tome I. pag. 555, has reduced this queſtion to a certainty; and, notwithſtanding the general opinion, that before the time of Guido the only method of notation in uſe was by the Roman capital and ſmall letters, which St. Gregory introduced, Martini proves that the notators, as they are called, of that time, made uſe of certain marks in this form  : * and as to lines of different colours, Kircher relates that he had found in the monaſtery of Vallombroſa ſundry very ancient books, written for the uſe of the choir there, before the time of Guido; and that the method of notation in thoſe books was by a red line, with certain notes or points placed in different ſituations above and below, according to the intervals intended to be marked by them †. Nivers ſpeaks alſo to the ſame purpoſe; for enquiring into the cauſes of the corruption of the Cantus Gregorianus, he aſſigns for one, the uncertainty of the method of notation before the time of Guido; for he ſays till his reformation of the ſcale, the characters were only ſmall points, commas, accents, and certain little oblique ſtrokes, occaſionally interpoſed; which great variety of minute figures he ſays was very difficult to comprehend, ſtill more to retain, and impoſſible to reduce to practice without the aſſiſtance of a maſter. In proof of this aſſertion he waves the authority of Kircher, who has mentioned the ſame fact, and ſays that he engaged in an exact and

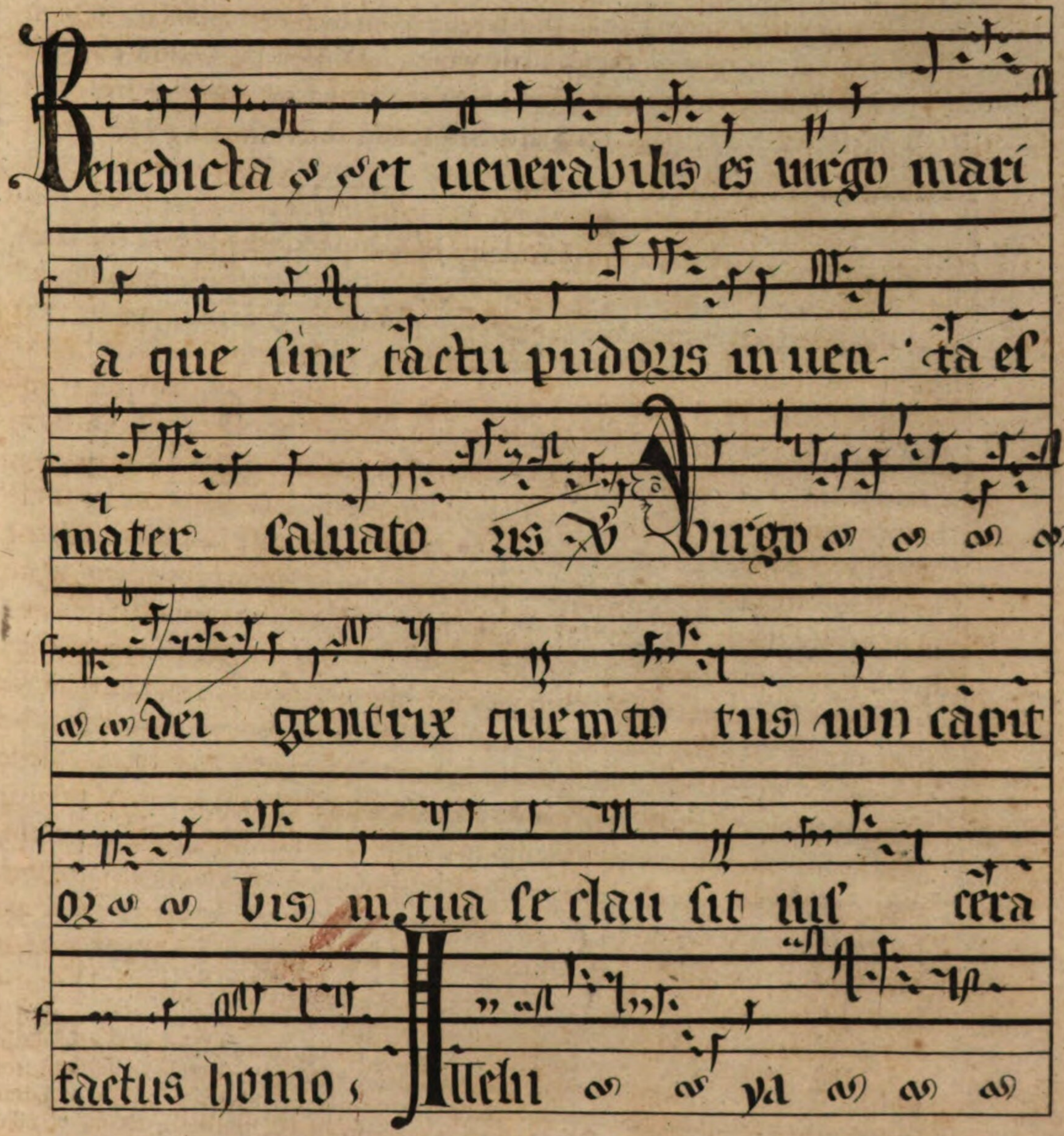
* Stor. della Muſica, pag. 183.

† What Guido has ſaid reſpecting the ſtations of the cliffs, and the practice of diſtinguiſhing them by red and yellow lines, is confirmed by the ſpecimens above inſerted from Martini; but it may here be remarked that they were alſo diſtinguiſhed by lines of a different thickneſs from the others in the ſtave, as appears by the following example, taken from the Lexicon Diplomaticum of Johannes Ludolphus Walther, fol. Ulm. 1756.

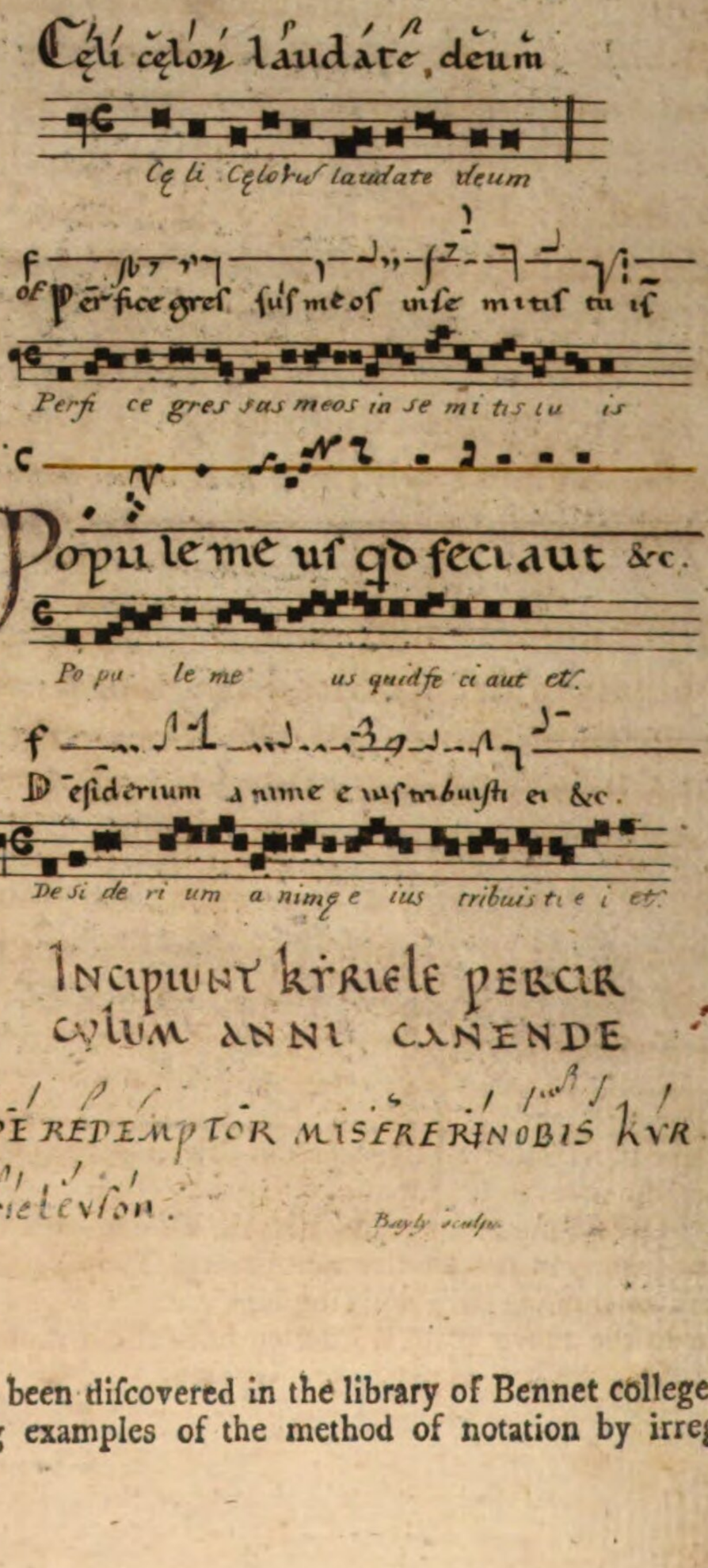
laborious

laborious reſearch among the moſt ancient manuſcripts in the library of the king of France, and in that of St. Germain De Prez, and others. Nay, he ſays that he had cauſed the Vatican to be ſearched, and

Pag. 461.



and had received from thence, memoirs and extracts from manuſcript antiphonaries, and graduals, many of which were above nine hundred years old, in which theſe characters appear. He farther ſays, that in this method of notation, by points and other marks, it was impoſſible to aſcertain the difference between the tone and ſemitone, which is in effect ſaying that the whole contrivance was inartificial, productive of error, and of very little worth. Diſſertation ſur le Chant Gregorien, chap. vi. Specimens of this method of notation, taken from Martini, vol. I. pag. 184, are inſerted in the following plate *.



* There has lately been diſcovered in the library of Bennet college in Cambridge, a manuſcript containing examples of the method of notation by irregular points above ſpoken

From what has been ſaid ſome idea may be formed of the nature and tendency of the Micrologus, and other tracts of Guido. Whether he was the author of any other than have been mentioned, is not eaſy to determine; but it ſeems that thoſe from which the foregoing extracts are taken, contain as much of his doctrine as he thought communicable by writing; for it is to be remarked that he frequently takes occaſion to ſay that ſome particulars of it are not to be underſtood but by a familiar converſation, and it is to be feared that moſt of his readers muſt entertain the ſame opinion.

It no where appears that any of his works were ever printed, except that Baronius, in his Annales Eccleſiaſtici, tom. XI. pag. 73, has given at length the epiſtle from him to his friend Michael of Pompoſa, and that to Theodald biſhop of Arezzo, prefixed to the Micrologus, and yet the writers on muſic ſpeak of the Micrologus as of a book in the hands of every one. Martini cites ſeveral manuſcripts of Guido, as namely, two in the Ambroſian library at Milan, the one written about the twelfth century, the other leſs ancient: another among the archives of the chapter of Piſtoja, a city in Tuſcany; and a third in the Mediceo-Laurenziano library at Florence, of the fifteenth century, theſe are clearly the Micrologus. Of the Epiſtle to Michael of Pompoſa, together with the Argumentum novi Cantus inveniendi, he mentions only one, which he ſays is ſomewhere at Ratiſbon *.

Of the ſeveral tracts above-mentioned, the laſt excepted, a manuſcript is extant in the library of Baliol college in Oxford. Several fragments of the two firſt, in one volume, are alſo among the Harleian manuſcripts now in the Britiſh Muſeum, Numb. 3199, but ſo very much mutilated, that they afford but ſmall ſatisfaction to a curious enquirer. The Baliol manuſcript contains alſo the Enchiridion of Odo, which Guido, at the cloſe of the Argumentum novi Cantus inveniendi, highly commends; as alſo the tract of Berno abbot of Richenou before mentioned.

ſpoken of; and a learned and ingenious gentleman of that college has furniſhed this work with the following article from the catalogue of that collection.

473. N. xxxviii. Codex membranaceus minoris formæ, ante Conquiſitionem exaratus. Hymni (ſive ut ſæpius in hoc Codice nominantur Tropi) recitandi diebus Dominicis et feſtis inter ſacra celebranda cum notis muſicis.

The laſt ſpecimen in the above plate is inſerted from the manuſcript thus deſcribed.

* Storia della Muſica, paſſim, et pag. 457, GUIDO.

BIBLIOTECA REALE MONACENSIS

The above particulars of the life and labours of Guido, which have indeed the merit of being immediately collected from his own writings, are poſſibly all that we ſhall ever be able to learn about him; for by a kind of fatality, very difficult to account for, his memory lives only in his inventions, and though there is ſcarce a dictionary, not to mention the innumerable tracts that direct the practice of vocal muſic, but mention him as having taken the ſyllables UT, RE, MI, FA, SOL, LA from a hymn of St. John the Baptiſt, and applied them to certain notes in the ſcale of muſic, yet no one author of credit, if we except cardinal Baronius, and he ſeems more deſirous of recording the Invention, than perpetuating the Memory of its author, has thought him worthy of a more honourable teſtimony than is every day given by the writers of Biliotheques, Memoirs, and Anecdotes, to any ſcribbling profeſſor of the Belles Lettres.

This ſupineneſs, or ignorance, or whatever elſe it may deſerve to be called, with reſpect to Guido and his improvements, has been the ſource of many miſtakes, as namely, that he was the inventor of muſic in conſonance, and of the organ and harpſichord; and that he was the firſt that introduced the practice of deſcant in ſinging. In the courſe of the preſent work ſome of theſe inventions have been, and the others ſeverally will be, fixed at periods very remote from that in which Guido lived: at preſent it ſhall ſuffice to refute them by ſaying, that as to the organ, it was invented probably about the middle of the eighth century; for that in 797 the emperor Conſtantine Copronymus ſent one as a curious and valuable preſent to Pepin king of France; and in 828 pope Vitalianus introduced the organ into the ſervice of the church; and farther, Guido himſelf in his Micrologus frequently mentions the organ as an inſtrument in common uſe in his time. As to the harpſichord, the name of it, or of the ſpinnet, of which it is manifeſtly but an improvement, does not once occur in the writings of the monkiſh muſicians who wrote after Guido, nor in the works of Chaucer, who ſeems to have occaſionally mentioned all the various inſtruments in uſe in his time. Gower indeed ſpeaks of an inſtrument called the citole, in theſe verſes:

He taught hir, till ſhe was certeyne
Of harpe, citole, and of riote,
With many a tewne, and many a note.

Confeſſio Amantis, fol. 178, b.

And

And by an ancient liſt of the domeſtic eſtabliſhment of Edward III. it appears that he had in his ſervice a muſician called a cyteller, or cyſteller: the citole or ciſtole, derived from ciſtella, a little cheſt, might probably be an inſtrument reſembling a box with ſtrings on the top or belly, which by the application of the taſtatura or key-board, borrowed from the organ, and jacks, became a ſpinnet. But as to the harpſichord, the earlieſt deſcription of it which, after a careful reſearch, could be found, is, that of Ottomarus Luſcinius, in his Muſurgia, publiſhed at Straſburg, in 1536. As to deſcant, it was the invention, as ſome imagine, of Bede, and he lived under the Saxon heptarchy, about the year 673; and laſtly, whether the common uſe of the organ and the practice of deſcant, do not preſuppoſe muſic in conſonance, is ſubmitted to the judgment of all who profeſs to know any thing of the ſcience.

As Guido made no pretenſions to great learning, or ſkill in philoſophy, but ſeems indeed to have been abſorbed in the ſtudy of his pſalter and the church offices, no one of the many writers who have occaſionally mentioned him, has entered into the particulars either of his character or his inſtitution; but his reformation of the ſcale, his improvement of the ſtave, and the method of notation invented by him, which has introduced into the world a kind of univerſal character *, beſpeak his merit more than the moſt laboured encomium could do, and have procured him a reputation that muſt in all probability endure as long as the love of muſic ſhall ſubſiſt.

* It is literally true, that for the purpoſe of repreſenting muſical ſounds by writing, the ſyſtem of Guido is an univerſal character; and every day's experience informs us that men of different countries, and who ſpeak different languages, and therefore are incapable of verbal communication, have yet the ſame idea of the power of the muſical characters, which they diſcover by their readineſs in performing compoſitions that they have never ſtudied. And this conſideration has induced ſome men to aſſert that the ſcale of muſic might be made to ſerve the purpoſe of an alphabet. Biſhop Wilkins firſt ſtarted this notion, and it is very ingeniouſly proſecuted in his tract entitled The ſecret and ſwift Meſſenger, chap. xviii. and by Mr. Oldys in the life of Peter Bales, the famous penman, in the Biographia Britannica.

END OF THE FIRST VOLUME.

BSB Bayerische StaatsBibliothek
MDZ Münchener DigitalisierungsZentrum Digitale Bibliothek

Hawkins, John

A General History Of The Science and Practice Of Music In Five Volumes

Bd.: 1

London (1776)

4 Mus.th. 622-1
urn:nbn:de:bvb:12-bsb10623005-0